MEMOIRS OF THE BOTANICAL SURVEY OF SOUTH AFRICA
MEMOIRS VAN DIE BOTANIESE OPNAME VAN SUID-AFRIKA

No. 55 1987

BARRIER PLANTS OF SOUTHERN AFRICA

L. HENDERSON

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SOUTHERN AFRICA

by

L. HENDERSON

Editor/Redakteur O.A. Leistner

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1987
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Foreword

Animals and primitive peoples can be seen to make use of natural barriers with almost every step they take: to prevent their being seen by the prey they stalk, to keep them safe from predators, to protect them from biting winds and searing heat. Small wonder that as civilization grew, people were often pre-occupied with creating better artificial barriers, exactly where they wanted them, to serve particular purposes. Hedges for privacy or security, windbreaks and shelter-belts, ornamental screens and territory demarcations are part of every rural and suburban scene. The use of plants as barriers in southern Africa can be traced through our earliest historical records to the stockades of iron-age peoples, Van Riebeeck's hedge of wild almond, *Brabejum stellatifolium*, and to hastily severed branches of the sweet-thorn, *Acacia karroo*, which beleaguered Voortrekkers packed between their protective circle of wagons. It is strange that so little research has been done on barrier plants in South Africa, although Africa abounds in hardy, twiggy, often thorny shrubs and trees — particularly suitable as security barriers. It is also regrettable that so much use has been made of alien species, many of which have become veld invaders that transform habitats and landscapes and threaten the survival of indigenous species. As a science, therefore, barrier planting in southern Africa is still in its infancy. It is hoped that the present publication will stimulate interest and critical observation and result in better information and better plantings.

We hope that the present publication, the first attempt at a comprehensive treatment of currently used and potential barrier plants in South Africa, will help to rectify the situation. It should focus attention on:

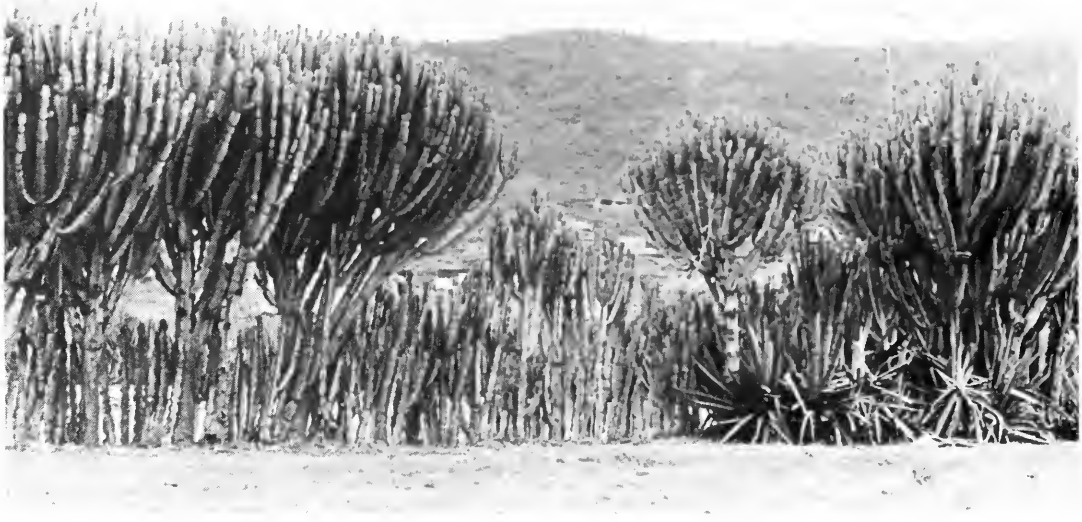
- the qualities required for barrier plantings for different purposes,
- the alternative choices available when selecting species,
- the problems that can result from the use of invasive aliens.

It must be accentuated, however, that only general indications can be given as to the suitability of particular species to particular climates and habitats. As all gardeners will have discovered to their cost at some time, local conditions which are almost infinitely variable, may make all the difference between the success or failure of a planting.

B. DE WINTER
Director: Botanical Research Institute

Pretoria, February 1986

Contents



The succulent *Euphorbia* spp. are often used by rural peoples in southern Africa as barrier plants. They are usually well adapted to dry conditions and poor soils, easily propagated from cuttings and in many cases, are resistant to browsing, due to the very toxic milky latex. Illustrated here is the tree Euphorbia, *Euphorbia ingens*. Cuttings of this species as well as plants of an alien *Agave* sp. have been used to fill in the lower gaps of the barrier.

Abstract

HENDERSON, L. 1987. Barrier plants of southern Africa. *Memoirs of the Botanical Survey of South Africa* No. 55, pp. 97.

The memoir presents information on 504 species of which 220 are indigenous and 96 of these are being suggested for use as barrier plants for the first time. Of the 408 species known as barrier plants in southern Africa, and which have been used as security hedges, garden hedges and windbreaks, 284 are aliens. Attention is drawn to the need to replace alien species which have become aggressive invaders, with less aggressive species, preferably indigenous.

Security hedge plants are illustrated by 47 photographs. The indigenous species are described and recommended for the four major climatic regions of southern Africa. The advantages of combination plantings of two or more species with different characteristics are emphasized. Alien species are listed with the climatic regions in which they have been grown in southern Africa or to which they are suited. Weedy and aggressive species are indicated.

Uittreksel

Die memoir verskaf inligting oor 504 spesies waarvan 220 inheems is en 96 hiervan vir die eerste keer as versperringsplante aanbeveel word. Van die 408 spesies wat as versperringsplante in suidelike Afrika bekend is en as veiligheidsomheinings, heinings om tuine en as windskerms gebruik word, is 284 uitheems. Aandag word gevestig op die behoefte om uitheemse spesies wat aggressiewe indringers geword het, te vervang met minder aggressiewe, verkieslik inheemse spesies.

Veiligheidsomheiningplante word deur 47 foto's geillustreer. Die inheemse spesies word beskryf en vir die vier hoofklimaatstreke van suidelike Afrika aanbeveel. Die voordele daarvan om twee of meer spesies met verskillende eienskappe in aanplantings te kombineer, word beklemtoon. 'n Lys van uitheemse spesies met die klimaatstreke waarin hulle in suidelike Afrika gekweek is of waarvoor hulle geskik is, word verskaf. Onkruid- en aggressiewe spesies word aangedui.

Introduction

Since early times, man has used plants to create physical barriers: as protection against wild animals and enemies; for shelter of dwellings, gardens, crops and livestock against injurious winds; to hide unsightly buildings or features of the environment; to provide privacy and for many other uses. Unfortunately, many of the stronger growing barrier plants have turned out to be veld invaders causing conservation problems. This survey of barrier plants in southern Africa was undertaken both to meet the growing demand for a variety of kinds of barrier plantings in different parts of the region and to provide suggestions of indigenous barrier species that can be used instead of invasive alien species.

Natural barriers of plants are frequently encountered in southern Africa, but the most impressive is that which occurs in the valley bushveld and coastal scrub of the eastern Cape. The bush at Addo and Uitenhage (Figure 1) for example, is tough, dense and spiny, averaging two to three metres in height. Animals have burrowed tunnels through the bush creating a maze which is truly formidable and which in the past claimed its toll of human lives.

FIGURE 1.—Valley Bushveld at Uitenhage: a man-made pathway provides access to an otherwise impenetrable natural barrier of tough, dense and spiny bush.

Veld types found to be particularly rich in plants with potential as security barriers, are: coastal forest and thornveld, lowveld, mixed bushveld and valley bushveld (after Acocks 1975). Within each of these veld types, natural barriers of plants were encountered.

A survey of the literature was conducted to determine the current knowledge. Most of this information concerns decorative hedges and windbreaks (Henderson 1983). References to security hedge plants used in southern Africa are few and scattered through the literature.

Field surveys were undertaken to identify species being used as barriers (but not recorded in the literature) and to investigate indigenous plants with as yet unidentified potential as barrier plants. These investigations were conducted in the early 1980's in the Transvaal, Natal, eastern Cape and northern Cape — mainly in bushveld, scrub and along forest margins. Apart from field notes which were compiled, photographs were taken and herbarium specimens and propagative material collected.

This study is therefore a compilation of already existing, but scattered, information on species used, as well as of potentially useful indigenous species that have not previously been used as barrier plants in southern Africa. While alien species feature prominently in the list of species already known as barrier plants, this survey indicates that there are numerous indigenous species suitable for barrier usage.

The performances of the suggested barrier plant species will vary greatly, depending on habitat and treatment, as well as on the genetic characteristics of the particular plants used. Performance studies could not be undertaken as part of the present study, but it is hoped that people using plants mentioned in the memoir, as well as other barrier plant species, will report back and so improve the fund of knowledge available.

Geographic regions and climatic zones

South Africa covers a wide range of climatic regions and it is therefore necessary to know the climatic requirements of species to be cultivated, and the climatic conditions under which they are to be grown. The maps depict-

ing the climatic zones (Figure 27, p. 43) and geographic regions (Figure 28, p. 44) have been used to define the climatic requirements and geographic distributions of the barrier plants recommended for use in this memoir.

The climatic zones delineated (Figure 27) are four very broad zones based on thermal and moisture regions in southern Africa. The map has been adapted from a silvicultural map of southern Africa by Poynton (1971). The moist zones range from subhumid to humid and have a moisture index greater than zero. The moisture index is an indication of how moist a climate is, taking into account both precipitation and potential evapotranspiration. The dry zones range from subhumid to semi-arid and arid, and have a moisture index less than zero. The hot zones range from warmer-temperate to subtropical and tropical, and the approximate mean monthly minimum temperature for the coldest month is greater than 0°C. The incidence of frost ranges from light to none. The cold zones range from cooler-temperate to subalpine and the approximate mean monthly minimum temperature is less than 0°C. The incidence of frost ranges from moderate to very severe.

The map of geographic regions (Figure 28) has been adapted from the map used by the then Department of Forestry for advisory purposes in its series on guides to tree-planting in South Africa and South West Africa/ Namibia (for example: Bands *et al.* 1973).

Indigenous security hedge plants

Introduction

Security hedge plants are used primarily as a means of preventing free passage of animals or people. In this context, they are commonly used to protect domesticated animals from intruders, as well as to contain them, particularly overnight. These plantings may also be used as part of the defence systems of specified areas, particularly of villages and military installations.

Most of the records of plants used for security purposes in South Africa are from Howes (1946), King (1951), Palgrave (1977), Palmer & Pitman (1972), and Sim (1919). Relevant information on security hedge plants in other African countries was located in the following papers: Allen (1909) — Zimbabwe (Rhodesia), Denyer (1978) — Nigeria and Zaire, Henkel (1923) — Zimbabwe (Rhodesia), Seignobos (1980) — Chad and northern Cameroon, Williamson (no date) — Malawi, and Willoughby (1918) — Zimbabwe (Rhodesia).

Seignobos (1980) describes in great detail the elaborate defence and enclosure systems created by the native people of Chad and northern Cameroon in pre-colonial times. Plantings of several different species were common — either as several rows, each of a different species, or two or more species combined in a single line of defence. Lines of defence were sometimes reinforced with low stone or mud walls, traps or ditches. Different categories of plants were used: thorny defensive plants, prop or support plants, poisonous plants, firebreak plants, magical plants and plants for the treatment of wounds.

Denyer (1978) refers to the ingenious defence system used on the plateau area in Nigeria. Complex entrance tunnels to villages were formed out of live *Euphorbia* hedges and planned on the principle of a maze. The tunnels were too narrow to allow a horse to turn around and the enemy could not break out without damaging the plants which then released a poisonous and very irritant latex.

Substantial information is also contained in Howes (1946) in which are described more than 100 species of spiny plants that have been used in the tropics as security hedges.

Combination plantings

Combination plantings of two or more different species in a single line of defence have been used by the native tribes of southern Africa (Figure 2) and north Africa (Seignobos 1980).

Most plants, with age, tend to open up underneath and become 'leggy' unless they are clipped frequently to encourage a dense branching pattern near ground level. In a garden hedge open gaps at the base are unattractive; in a security hedge they are not permissible and must either be prevented (by clipping or selection of a species that maintains ground density) or be filled in with low-growing plants, barbed wire or a stone wall, etc.

The combination of several species, each with different characteristics, can greatly increase the effectiveness of a barrier. For example the combination of thorny *Acacia* shrubs and poisonous *Euphorbia* species makes a formidable barrier. In Figure 3, *Acacia luederitzii* var. *retinens* is a sturdy framework while *Euphorbia grandicornis* is an irritant filler. The *Acacia* has hooked thorns (Figure 4) and the *Euphorbia* has straight thorns (Figure 5). An intruder cannot hack his way through for fear of being burned and blinded by the toxic *Euphorbia* latex. Even the slightest disturbance of the barrier will cause the *Acacia* thorns not only to hook or stab the intruder but to puncture the *Euphorbia* and release the toxic latex.

As described previously (Henderson 1983), four categories have been used to classify the species needed for mixed plantings: framework plants, short fillers, tall fillers and entanglers (Figure 6).

Characterization

The ideal characteristics for security hedge plants include the following:

- sturdy, woody or succulent shrubs or low-growing trees
- multi-stemmed from the base or low-branching; rigid or entangling branches; spreading crown; small, sparsely distributed leaves that will cast little shade

FIGURE 2.—A combination planting of *Euphorbia ingens* and *Agave americana* in Sekukuniland, southern Africa.

FIGURE 3.—A natural combination of *Acacia luederitzii* var. *retinens* (framework) and *Euphorbia grandicornis* (irritant and spiny filler).

FIGURE 4.—Inflated hooked thorns of *Acacia luederitzii* var. *retinens*.

FIGURE 5.—*Euphorbia grandicornis*. The spines are up to 70 mm long.

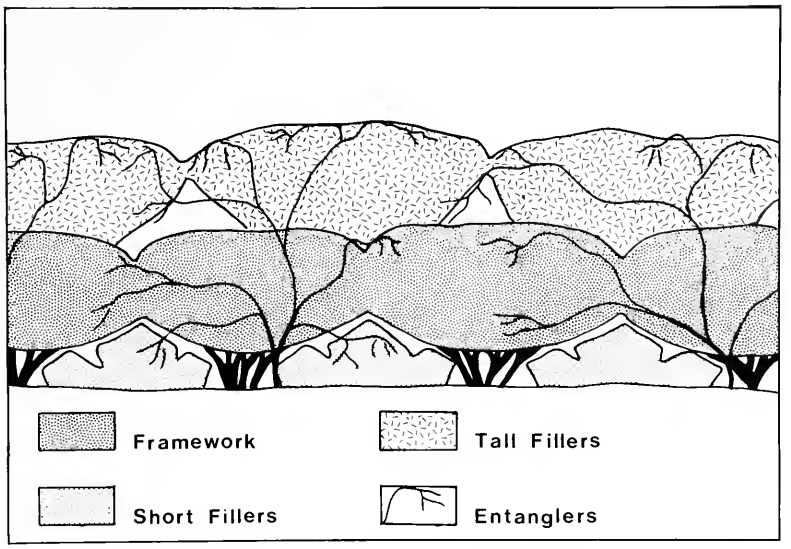


FIGURE 6.—A combination planting of framework plants, short fillers, tall fillers and entanglers.

- presence of spines, prickles or thorns
- irritant action through stinging hairs, latex or other means
- easy propagation and establishment by seed or vegetative means
- little attention or upkeep required after planting out
- ability to grow under a wide range of climatic and soil conditions
- rapid growth; longevity/permanence
- ability to withstand considerable root competition
- disease- and pest-resistant
- the ability to withstand fire, trampling and browsing
- capacity for regeneration if damaged
- non-invasive

Recommended species

The literature survey, computer search and field observations together yielded the names of 80 species already in use as security hedge plants in southern Africa. Of these, 41 (50%) are aliens, and eight of these species are declared weeds in South Africa.

As a result of the literature survey and field investigations, 105 taxa of indigenous plants have been identified as being potentially useful security hedge plants in South Africa, but only about ten of these have been used to any great extent.

One hundred and five indigenous taxa of plants recommended for trial in South Africa are given in Tables 1 & 2 (all tables from p. 45). Table 1 lists the botanical (according to Gibbs Russell *et al.* 1985 and Gibbs Russell *et al.* in prep.) and common names [according to the National Tree List (De Winter *et al.* 1978) unless specified], the climatic (Figure 27) and geographic (Figure 28) regions of occurrence and the barrier categories (Figure 6) into which each taxon falls.

Table 2 gives descriptive as well as miscellaneous information which includes the method of propagation, response to trimming, poisonous and irritant properties, and substrate, soil and moisture requirements. Additional information on each of the taxa listed in Tables 1 & 2 appears under Further notes on indigenous species on pp. 15–38.

The information presented is accurate within the limits of existing knowledge and has been extracted mainly from literature and specimen labels in the National Herbarium in Pretoria. Where there is uncertainty about any item this is followed by a question mark. None of the plants listed meets all the requirements set out for an ideal security hedge plant but the tables can be used to help select the most promising species for a particular set of circumstances.

Tables 3, 4, 5 and 6 list the most highly recommended species for each of the 4 major climatic regions. Table 3 includes recommended species for the hot and moist regions. All the framework species with the possible exception of *Phoenix reclinata, Entada spicata* and *Dovyalis rhamnoides* have been used as hedges. The first four species — *Carissa macrocarpa, Dovyalis caffra, Acacia ataxacantha* and *Flacourtia indica* have been fairly widely used as security hedges and have proved successful. All these species can be used on their own as security hedges. The best species i.e. those that maintain ground density the best, are marked with squares. The other species, except for *Phoenix reclinata*, tend to become scandent and open up underneath. This can be remedied by clipping or combining with a short filler or reinforcing with fencing, barbed wire etc..

Table 4 includes recommended species for the hot and dry regions. Two important factors in the selection of the best species were drought-resistance and resistance to browsing. All the *Euphorbia* spp. listed are browse-resistant. The species marked with asterisks have been

used successfully as stock-proof barriers but need protection when young. The species marked with plus signs are apparently not favoured by browsers (although they may be eaten occasionally). The species which maintain ground density the best have been marked with squares. The scandent species — *Acacia ataxacantha* and *Capparis* sp. will maintain ground density fairly well, provided there is no support available.

Table 5 includes recommended species for the cold and moist regions. Important factors in the selection of the best species were frost-resistance and previous use as a hedge. Of all the species, *Dovyalis caffra* maintains ground density the best. Ten of the 16 framework species have been used previously for hedging.

Table 6 includes recommended species for the cold and dry regions. Important factors in the selection of species were drought- and frost-resistance and previous use as a hedge. Ten of the 15 framework species have previously been used as hedges. The growth of most species is stunted under these harsh conditions and consequently they maintain ground density better than under more hospitable conditions.

Environmental effects

Climatic and other environmental factors, as well as the growth form under various conditions must be considered when choosing species suitable for security hedge plantings.

The cold interior (see Figure 27) of southern Africa is poorly endowed with indigenous woody plants, which is partly the reason for the almost exclusive use of alien (introduced) woody species in these regions.

Of the 105 indigenous taxa recommended for trial in southern Africa, only 17 are considered to have appreciable frost resistance and could be planted without protection in the very cold interior. A further 26 taxa are considered to have moderate frost resistance. Unfortunately the cold interior, which includes the Pretoria–Witwatersrand–Vereeniging complex, is the most densely populated and developed region in South Africa and accordingly has a great demand for hedging.

In contrast there are many potentially useful indigenous security hedge plants for the warmer regions of southern Africa and many of these have appreciable resistance to drought.

Unfavourable conditions such as exposure to wind, cold, drought, heat, fire and browsing by animals may cause plants to develop features which are desirable for a security hedge plant. These features include a decrease in size or stunted growth, increased branching from the base and formation of coppice shoots which often replace the main stem, an increase in succulence and other xerophytic characters in the foliage, and a development of thick bark and spinosity.

In a study of the growth forms of Natal plants, Bews (1917) observed that spinosity is generally associated with aridity and intense illumination, but there are exceptions. Certain coastal forest species, *Scolopia zeyheri* and *Zanthoxylum capense*, for example, are very spiny. Also, a single species may show a certain variability of thorn development which does not seem to depend on aridity or intense illumination but is rather associated with new or vigorous growth. Young plants of *Acacia*, for example, are usually very thorny but become less so as they grow older. Frequently large thorns develop on coppice shoots whereas the rest of the plant may be unarmed. Some species may be thornless in the tree form but very thorny if kept cut as a hedge. A single species, even individuals of a single population, can exhibit a wide range of growth form under different environmental conditions.

The effect of the environment on growth form is an extremely important consideration when selecting the best species for a particular set of circumstances. A rigid, densely branching, spiny plant in a cold and arid environment will most likely become more open in appearance, taller growing and with larger leaves and fewer spines per unit length of stem in a less harsh environment. Such a plant may still be of use in the latter environment provided its growth form and impenetrability can be improved.

Ways of improving growth form and impenetrability

Trimming can improve growth form and impenetrability in the following way: it encourages the production of numerous and stout branches, rather than a few weak ones; it prevents the upper branches from growing out so wide as to shade out others, especially those near the ground; it encourages the production of young growth which is frequently the spiniest. Trimming is best for a neat security hedge and should be done frequently but lightly.

Provided their roots are well established, certain species will respond dramatically to a very severe cut or burn. *Acacia karroo* and *A. nigrescens*, for example, can produce a dense multi-stemmed thicket within a season or two. With species of a scandent habit, e.g. *Acacia schweinfurthii*, the trailing branches can be tied back or interlaced with one another from time to time in the required position. An impenetrable mass will develop as further growth takes place from these branches and only occasional trimming is required.

Plants can be laid horizontally on the ground as they are likely to send up a number of shoots from each prostrate stem resulting in an extra thick hedge. Finally, a barrier can be reinforced with barbed wire coils or fences, earth or stone walls or mounds, etc.

The protection of hedges against animals

Most young plants, with the exception of the poisonous *Euphorbia* spp., will need protection from animals. Double fencing would be most effective but is costly. Thorny, dead branches can be used in rural areas where there is a supply of thorn trees, but these are a temporary measure and will have to be replaced from time to time.

Plants set under the bottom wire of a single fence will be less liable to damage by stock than if planted to

one side of the fence. The plants are best not planted upright in the ground, but almost horizontally and pointing along the fence (Yeates 1942).

A stock-proof hedge can be relatively quickly established by planting truncheons of plants known to strike easily by this means e.g. *Commiphora* spp. The truncheons should be closely spaced or arranged at an angle so that they cross one another in a latticed fashion (Howes 1946).

Hedges can be made of poisonous plants such as certain *Euphorbia* spp., or can be protected by a row or two of these plants. The poisonous *Euphorbia* spp. could largely replace sisal (*Agave sisalana*) which has been used both widely and on a large scale. The young sisal plants are eaten by a wide variety of animals including elephants, kudu, baboons and porcupines (Figure 7). The poisonous *Euphorbia* spp. in contrast are eaten with impunity only by the black rhinoceros and are avoided by other animals, even goats, in overgrazed areas. The poisonous latex of the *Euphorbia* spp., however, renders the plants difficult and dangerous to handle and transport.

FIGURE 7.—Porcupine damage to *Agave sisalana*.

Other indigenous barrier plants

Garden hedge and windbreak plants

Introduction

Since garden hedges are often planted to provide some windbreak benefits, and windbreaks are often desired to be aesthetically pleasing, many of the species used are commonly used for both purposes. Garden hedges are primarily decorative barriers which may be clipped to form neat and attractive shapes. They are used to provide privacy and to partition areas within a garden. Windbreaks serve primarily to break the force of winds and provide shelter to people, animals and farmsteads (shelterbelts), and orchards or crops (windbreaks).

Important sources of information on indigenous and alien garden hedge plants are: Eliovson (1965), Haigh & Wilhelmij (1973), Harrison (1959), Keet *et al.* (1978), King (1951), Palgrave (1977), Palmer & Pitman (1972), Poynton (1972), Sim (1919), Smith (1966), Stapleton (1940), and Van der Spuy (1957).

Very few indigenous species appear to have been used as windbreak plants in South Africa. Only three of the 100 species cited by Van Rensburg (1973) are indigenous. Most of the records of the use of indigenous species are from Poynton (1972) and King (1951) — a total of 26 species.

The most important references to alien windbreak plants are: Poynton (1972), Van Rensburg (1973), and the then Department of Forestry guides to tree-planting in South Africa (Bands *et al.* 1973; Fenn *et al.* 1973, 1974; Haigh & Wilhelmij 1973; Keet *et al.* 1978; Van der Merwe *et al.* 1978; Van Rensburg 1975, and Wessels *et al.* 1978).

Characterization

The different requirements for garden hedges and windbreaks have necessitated the separate listing of the characteristics of plants suitable for these uses. For garden hedges, ideal characteristics include:

- woody or succulent shrubs or small trees
- multi-stemmed from the base or low-branching; dense evergreen foliage and closely arranged branchlets; should not be too thorny or difficult to clip
- attractive foliage, flowers and fruit
- non-poisonous; non-irritant
- easy propagation and establishment by seed or vegetative means
- * reasonably rapid growth; longevity/permanence
- ability to withstand considerable root competition
- good response to trimming
- disease and pest-resistant
- non-invasive

Ideal characteristics of windbreaks/shelterbelts include:

- woody or succulent shrubs and trees
- strong trunks, low lateral branches and fairly dense, evergreen foliage
- a minimum height of 5 m in most cases
- easy propagation and establishment by seed or vegetative means
- rapid growth; longevity/permanence
- ability to withstand considerable root competition
- tolerance of wind, and in coastal areas, of salt-spray
- disease and pest-resistant
- non-invasive

Recommended species

One hundred and forty seven indigenous species of plants that have either been used or have potential as garden hedge and windbreak plants in southern Africa are given in Tables 7 & 8. Table 7 lists the botanical (according to Gibbs Russell *et al.* 1985 and Gibbs Russell *et al.* in prep.) and common names [according to the National Tree List (De Winter *et al.* 1978) unless specified], the climatic (Figure 27) and geographic (Figure 28) regions of occurrence. The barrier categories (i.e. hedge or windbreak) to which each species is suited are indicated. A few species have been classified as screens since they do not fit strictly into either of the hedge or windbreak categories. They should be allowed to grow naturally without being cut back.

* A fast rate of growth is not always an advantage in the later life of the hedge, as rapidly-growing plants tend to open up underneath. Fast growth also almost automatically implies that frequent trimming will be needed.

Table 8 gives descriptive characteristics as well as miscellaneous information which includes method of propagation, response to trimming, poisonous and irritant properties, substrate, soil and moisture requirements. Additional information on each of the species listed in Tables 7 & 8 appears under Further notes on indigenous species on p. 15. Table 9 lists 45 species that have been described as good or excellent hedge and windbreak plants. Table 10 lists the most highly recommended species for the four climatic regions.

Road-island plants

Plants grown in road-islands often serve purely decorative purposes and are therefore of no concern in this study. However, many road-island plantings are used for screening purposes, particularly to visually separate traffic moving in opposite directions, such as on free-ways. Dense plant structures to provide a safety barrier (to absorb the impact of a collision) and to prevent the illegal passage of pedestrians across the road-island may also be desirable. Ideal characteristics of road-island plants include:

- sturdy, woody or succulent shrubs
- multi-stemmed from the base or low-branching; dense evergreen foliage and closely arranged branchlets
- attractive foliage, flowers and fruit
- easy propagation and establishment by seed or vegetative means
- little attention or upkeep required after planting out
- ability to grow under a wide range of climatic and soil conditions and in particular to tolerate drought, frost, heat and poorly-drained soils
- rapid growth; longevity/permanence
- ability to withstand considerable root competition
- disease and pest-resistant
- non-invasive

A list is given in Table 11 of species which may be suitable for road-island plantings.

Alien barrier plants

As outlined previously (Henderson 1983), there is a general need to broaden the range of barrier plants available for various uses in different parts of the country. There is also a particular need to replace many of the alien species which have become invasive, threatening the pasture and tourist industries, and the indigenous flora (Henderson & Musil 1984; Stirton 1978).

Two hundred and eighty four species of alien plants have been used or recommended for use as barrier plants in southern Africa (security hedges — 31 species, garden hedges — 140 species and windbreaks — 182 species). Ninety two species (or 32% of the total) have shown weedy tendencies. Of these, 50 species are particularly aggressive invaders capable of suppressing and displacing indigenous vegetation. The remaining species are naturalized locally or have spread from plantations or occur in disturbed places. Eight of the alien species are declared weeds in South Africa in terms of the Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) (Republic of South Africa 1984). These species are *Caesalpinia decapetala, Cereus peruvianus, Hakea gibbosa, H. sericea, H. suaveolens, Lantana camara, Opuntia ficus-indica* and *Pereskia aculeata*. Other invasive species are: *Crataegus laevigata, Parkinsonia aculeata, Pinus halepensis, Prosopis glandulosa, Pyracantha angustifolia, P. coccinea* and *Rosa eglanteria*. The popularly used *Agave americana* and *A. sisalana* (Figure 8) spread locally, by suckering, from plantings.

Table 12 lists the scientific and common names of each of the 284 species, the major climatic zones (Figure 27) in which they have been grown or to which they are suited and the barrier category to which each species is suited. Declared weeds and invader plants (Republic of South Africa 1984), aggressive weeds, and other weeds of undisturbed and disturbed places are indicated.

The species listed in Table 10 are recommended for use instead of weedy aliens for each of the four climatic zones in southern Africa.

FIGURE 8.—*Agave sisalana*. A popular security hedge plant.

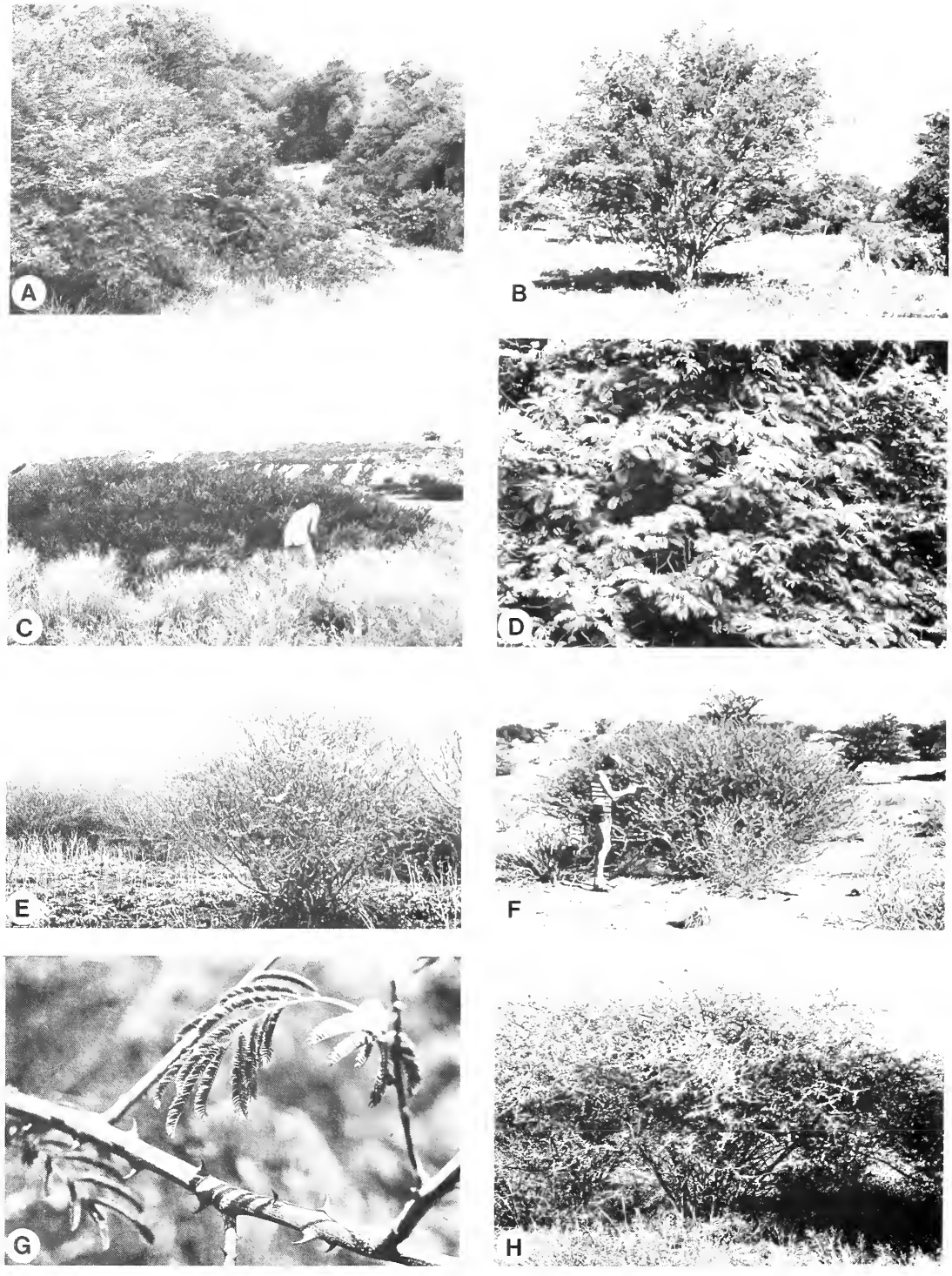


FIGURE 9.—A, *Acacia ataxacantha*. It can form impenetrable thickets in the high rainfall areas; B, *Acacia erubescens*. A multi-stemmed or low-branching, sturdy tree with sharp recurved thorns; C, *Acacia hebeclada* subsp. *hebeclada*. A dense, stoloniferous shrub that forms large spreading thickets; D, *Acacia kraussiana*. On its own it could make an attractive and dense security hedge; E, *Acacia luederitzii* var. *retinens*. A high potential framework plant. It is sturdy, multi-stemmed or low-branching with a dense, spreading and intensely thorny crown; F, *Acacia mellifera* subsp. *detinens*. A multi-stemmed, compact and very thorny shrub in the northern Cape; G, *Acacia schweinfurthii*. Its long, flexible and entangling stems are armed with scattered thorns; H, *Acacia senegal* var. *rostrata*. A potential framework plant. It is sturdy, multi-stemmed or low-branching with a flat, spreading crown of numerous interlacing branches and fine foliage which casts little shade.

Further notes on indigenous species listed in the tables

The following notes on indigenous species supplement the information in Tables 1–11 (pp. 45–85).

Acacia ataxacantha (Fabaceae)

A most attractive plant in flower and fruit. The flowering season may last several months. The thorns could be a disadvantage in a garden hedge. On its own it could make an excellent framework plant. In a combination planting its dense and scandent growth may smother other species. It is difficult to cut a path through, and coppices when damaged (D. Edwards pers. comm.). It can form impenetrable thickets (Figure 9A) and become a bad weed in high rainfall areas. Young plants require some time to become established, thereafter they grow rapidly (Carr 1976). It has been used as a living barricade around villages and kraals in Africa (Howes 1946; National Herbarium, Pretoria).

Acacia brevispica

Similar to *A. ataxacantha* but not as common, widespread or ornamental. Moderately fast-growing (Carr 1976).

Acacia davyi

A potentially useful plant for the cold highveld where, according to Carr (1976), it appears to be completely frost hardy. The rather straggly growth form may be improved by clipping. Fast-growing (Carr 1976).

Acacia erubescens

Could make a very strong framework. Multi-stemmed (often with the stems close together (Figure 9B)) or single-stemmed with low branching and a spreading crown. The branches are rigid, strong and equipped with hard and vicious thorns. It produces little dead material and is a low fire risk (D. Edwards pers. comm.). Growth on the highveld is very slow (Carr 1976) but should be considerably faster in the warmer regions. A declared invader plant in the Cape and Transvaal.

Acacia exuvialis

Can form impenetrable thickets and is moderately frost-hardy. A potentially useful plant for the colder regions. Moderately fast-growing (Carr 1976).

Acacia fleckii

Closely resembles *A. erubescens*. A sturdy, usually multi-stemmed shrub or low-branching tree with a dense, spreading crown. Fast-growing (Carr 1976). A declared invader plant in the Cape.

Acacia grandicornuta

A sturdy, heavily armed, low-branching tree with a dense, rounded crown. It has distinctive ascending branches and maintains ground density well. Grows very thickly and is difficult to penetrate. Moderately fast-growing (Carr 1976).

Acacia hebeclada subsp. *hebeclada*

A low-growing, stoloniferous shrub (Figure 9C). Large, spreading thickets up to 15 m in diameter may be formed. The subterranean stems are protected from any above-ground mechanical, frost or fire damage and respond by producing aerial shoots. Spreading thickets are encouraged by overgrazing. Slow-growing (Carr 1976). Leaves and immature pods contain large quantities of prussic acid and are occasionally poisonous to stock and game (National Herbarium, Pretoria; Palmer & Pitman 1972). A declared invader plant in the Cape and Transvaal.

Acacia karroo

Produces an outstanding display of yellow flowers which have a strong and sweet fragrance. A good source of honey and attractive to bees (Anderson *et al.* 1973). It flowers on and off throughout the summer season whenever it 'smells' rain. Thorns could be a disadvantage in a garden hedge. One of the most widespread and adaptable woody species in southern Africa. A very variable species and care must be taken in selecting a suitable form. A dense, multi-stemmed, shrubby growth form should be obtainable by cutting or clipping. It coppices vigorously if chopped or cut back by frost or fire (Carr 1976; Ross 1975). Often thicket-forming and difficult to eradicate from agricultural land; it is a declared invader plant in South Africa. Fast-growing during its early years but slowing down later (Carr 1976). Has been used as a living barricade around kraals, but more often the dead, spiny branches have been placed around kraals and cultivated lands.

Acacia kraussiana

On its own it could make an attractive and dense security hedge, especially for the coastal belt (Figure

9D). It could be used most effectively over a wall or fence and should be fast-growing in its natural habitat.

Acacia luederitzii var. *retinens*

A potentially very useful framework plant for the dry regions. Usually a sturdy, multi-stemmed or low-branching shrub with a dense, spreading crown (Figure 9E). The crown may trail down to ground level forming an impenetrable tangle and barring access to the main stems (Carr 1976). The hooked thorns are vicious and very effective (Figure 4). Not browsed in the Mkuze Game Reserve (P. Goodman pers. comm.). Utilization by browsers has not been observed in the Kruger National Park (Van Wyk, P. 1972). It can spread at the expense of grazing land. Growth on the highveld is slow (Carr 1976) but should be considerably faster in warmer regions.

Acacia mellifera subsp. *detinens*

Often a many-stemmed, compact shrub particularly in the northern Cape (Figure 9F) or a small tree which is usually several-stemmed. It is robust, has a spreading crown which is densely branching, rigid and intensely thorny. Masses of fragrant, creamy flowers are produced in spring before it comes into leaf. Known as a honey plant in the northern Cape (Anderson *et al.* 1973). Spreads rapidly from seed and vegetatively from coppice buds which are situated at or below soil level. It produces masses of shallow, spreading roots which preclude the growth of other perennials (A. Gubb pers. comm.). It has become a pest plant in parts of the country where it has spread almost to the exclusion of other species and is a declared invader plant in the Cape and Transvaal. Growth on the highveld is slow (Carr 1976). It has been used for security hedging in southern Africa (D.S. Hardy pers. comm.).

Acacia nigrescens

A potential tall filler. It is usually a tall, single-stemmed, high-branching tree with a rather open crown. The leaves are small and deciduous. A denser basal growth should be obtained by burning or clipping. It is not easily killed by fire and trees burned to the ground thereafter form multi-stemmed thickets (Van Wyk, P. 1972). Masses of creamy-coloured, scented flowers are produced in August/September for several weeks before it comes into leaf. Slow growing (Palmer & Pitman 1972). It is a declared invader plant in the Transvaal.

Acacia schweinfurthii

On its own it can form dense thickets 3 to 4 m high which resemble cultivated, but untrimmed, hedges (Carr 1976). The fresh green leaves contribute to making this an attractive hedge. There is little secondary branching, the stems are flexible, very entangling and armed with scattered thorns (Figure 9G). It has been used for security hedging in southern Africa and is best used on its own, for it opens up underneath when it has some support and will smother other non-scandent species. The thorny twigs and leaves are not browsed by any animal in its natural habitat, and it can become a forest weed (Von Breitenbach 1965). Fast-growing, even on the highveld in a sheltered position (Carr 1976).

Acacia senegal var. *rostrata*

Could make an excellent framework plant. It is sturdy, multi-stemmed or low-branching with a flat, spreading crown of numerous interlacing branches and fine foliage which casts little shade (Figure 9H). The thorns are arranged in threes like *A. senegal* var. *leiorhachis* and are extremely effective. Can spread and form impenetrable thickets and is a declared invader plant in the Cape and Natal. It has been used for security hedging in southern Africa (D.S. Hardy pers. comm.). Growth is slow on the highveld (Carr 1976) but should be considerably faster in the warmer regions. Produces an abundance of seed (Van Wyk, P. 1972).

Acacia senegal var. *leiorhachis*

A potential tall filler. It has one to a few stems which give rise to a very sparse and slender crown (Figure 10) which casts little shade in summer and winter (deciduous). The thorns are most effective, occurring in threes, the middle thorn hooked downwards and the side thorns upwards. Game animals have not been observed to utilize this tree in the Kruger National Park (Van Wyk, P. 1972). It can grow on exceptionally dry, rugged and stony terrain with shallow soil. Usually flowers under moisture stress and produces very little seed (Van Wyk, P. 1972). Growth on the highveld is slow but should be considerably faster in the warmer regions (Carr 1976).

FIGURE 10.—*Acacia senegal* var. *leiorhachis*. A potential tall filler.

Acacia tortilis subsp. *heteracantha*

Best used as a framework plant in the arid, shallow-soiled regions where its growth is stunted and it remains shrubby in growth form. A denser basal growth should

be encouraged by cutting or clipping since it coppices vigorously if damaged. The thorns are of two kinds — straight and hooked — and are very effective. There have been some unconfirmed allegations that the foliage can become toxic to domestic livestock (National Academy of Sciences 1979). Young plants are damaged by frost and require protection (National Academy of Sciences 1979). Slow-growing (Carr 1976; Poynton 1972) but plants frosted back can grow 1 m in a season (Carr 1976). It spreads in overgrazed land and in shallow, stony soils it develops long, lateral roots which can become a nuisance in nearby fields, paths and roadways (National Academy of Sciences 1979). It is a declared invader plant in the Cape, Natal and Transvaal. It is quite likely that it has been used, like *A. karroo*, as a barricade around kraals and cultivated lands.

Adenium multiflorum (= *A. obesum*) (Apocynaceae)

A very showy plant in flower which has potential as an ornamental low border or hedge. In winter and early spring it bears clusters of 5-petalled flowers of white, beautifully coloured about the edge with pink or red. It has a toxic latex that has been used as a fish and arrow poison (Watt & Breyer-Brandwijk 1962) and has been suspected of causing stock poisoning (National Herbarium, Pretoria). There have apparently been no cases of human poisoning, but the plant should be regarded as potentially dangerous.

Agathosma crenulata (Rutaceae)

This is one of three *Agathosma* spp. used for the production of the medicinal drug, buchu. The leaves are aromatic and the flowering season lasts from mid-winter to early summer. It has been used as a garden hedge in South Africa (National Herbarium, Pretoria) and could be used for low, formally clipped hedges, like the 'box' hedges of Europe.

Aloe arborescens (Liliaceae)

A strikingly beautiful plant in flower. The flowers are arranged in conical heads and range in colour from red and scarlet to yellow. A good source of pollen and nectar, attractive to both bees and birds. It can make a most attractive, neat, compact and evergreen hedge which requires little or no attention once established (Figure 11). It maintains ground density extremely well. It is fast-growing (D.S. Hardy pers. comm.) and has frequently been used as a hedge around kraals, particularly in the Transkei (Palmer & Pitman 1972). It has no thorns and offers little resistance to a person armed with an axe or panga.

Aloe castanea

A potentially useful informal hedge plant. It has a most attractive growth form, usually branching near the base or higher, sometimes rebranching and producing 10 to 20 crowns. Individual flower-buds are reddish-brown and the open flowers are yellow. Overall, the inflorescence appears chestnut-coloured — *castanea.* Bees collect the pollen while birds are attracted to the nectar.

Andrachne ovalis (Euphorbiaceae)

The root is said to be poisonous and the leaves smell of prussic acid when wilted (National Herbarium, Pretoria). A decoction of the root has been used as an anthelmintic in man and animals by the Swati (Watt & Breyer-Brandwijk 1962). It has been cultivated as a low border (Stapleton 1940).

FIGURE 11.—*Aloe arborescens.* It can make a most attractive, evergreen, neat and compact hedge.

Apodytes dimidiata (Icacinaceae)

The white flowers have a heavy, sweet scent and are borne abundantly in sprays up to 110 x 80 mm. The fruit is a black drupe with a red heel or aril. According to Palmer & Pitman (1972) it makes a graceful garden tree and could make a handsome hedge in the cold districts.

Azima tetracantha (Salvadoraceae)

A potentially useful consolidation plant because of its scandent growth habit. On its own it tends to open up underneath and in the middle because of its drooping nature. This might be remedied by clipping since it coppices vigorously when cut and spreads with the aid of underground runners. It could be used as a short filler on the edge of a barrier especially if it is clipped. It can spread and form dense thickets in overgrazed areas. A prick from the needle-sharp spines (Figure 12) causes an unpleasant burning sensation (Palgrave 1977) and sometimes an allergic reaction (Van Wyk, P. 1972). Stems lack strength, older stems are spineless and the spines, though irritant, are not strong and break away easily from the stem. The young shoots are the spiniest.

Balanites maughamii (Balanitaceae)

A potential tall filler. A tree with an open crown which casts moderate shade in summer and very light shade in winter (deciduous). The branches are armed with

FIGURE 12.—*Azima tetracantha*. Four needle-sharp spines occur at each pair of leaves.

strong, vicious, forked spines. Slow-growing (Van Wyk, P. 1972), often on poorly-drained sites such as floodplains and waterlogged soils. The fruits are poisonous to certain aquatic organisms without lungs, e.g. the bilharzia snails (Van Wyk, P. 1972).

Bauhinia galpinii (Fabaceae)

This species is an extremely beautiful flowering shrub. The salmon/red flowers are borne in large, branched sprays up to 200 mm in diameter. It can be grown as an informal hedge or screen and has been used successfully as an ornamental road-island screen in the warmer parts of the Transvaal. It is fast-growing, about 1 m or more per annum (Poynton 1972) and will start flowering at the end of its second year (Von Breitenbach 1965). It can be grown in most places except where frosts are very severe. Aerial parts are sometimes killed or defoliated by heavy frosts and may need to be cut back in winter. It should be grown in well drained soil.

Bauhinia tomentosa

A beautiful flowering shrub but not as showy as *B. galpinii*. One to three of the petals, which are yellow, have a dark maroon patch at the base. It can be grown as an informal hedge.

Bequaertiodendron magalismontanum (Sapotaceae)

This species produces one of South Africa's best wild fruits (the 'stamvrug') — the fruit is a red, edible berry, with a high vitamin C content (Palmer & Pitman 1972) and a sweet, but rather astringent flavour. It has been used to make wine, brandy, syrup and jelly (Palmer & Pitman 1972). It usually grows as a compact, low-growing and densely leafy shrub. It makes a decorative garden shrub and has potential as an informal hedge. The leaves are decorative, silvery to dark green above, their lower surface covered with golden hairs. According to P. van Wyk (1974) the leaves are seldom eaten by wild animals.

Brabejum stellatifolium (Proteaceae)

This is the wild almond planted as a hedge at the foot of Table Mountain by Jan van Riebeeck. It makes an excellent broad hedge where it has room to spread (Eliovson 1965). The white, scented flowers provide a splendid show in early summer. The seed, which can liberate prussic acid (Steyn 1934) is poisonous unless well soaked (Palmer & Pitman 1972). It should not be planted near bee-hives as its honey is most unpalatable (Anderson *et al.* 1973).

Brachylaena discolor (Asteraceae)

This species makes a good trimmed hedge (Palmer & Pitman 1972) and has been used for low shelterbelts and rough hedges in situations exposed to sea winds (King 1951). It is fast-growing (Palgrave 1977). The leaves are decorative, dark green above with their lower surfaces silvery white, and are so intensely bitter as to be unpalatable, yet they are occasionally browsed by eland (National Herbarium, Pretoria).

Brachylaena neriifolia

This species should prove satisfactory as a shelterbelt as well as a tall hedge. The leaves are too large for a closely trimmed hedge (Matthews no date).

Buddleja auriculata (Loganiaceae)

A moisture-loving, appreciably frost-hardy species that often branches from ground level and is neat, shapely and luxuriant. It makes a good garden shrub or tree and has potential as a decorative hedge. It stands clipping well (Palmer & Pitman 1972). The flowers occur in attractive terminal heads in late autumn or winter and are strongly and deliciously scented. It blooms just before *Buddleja salviifolia* and a garden with both species is assured of a long season of colour and scent (Palmer & Pitman 1972).

Buddleja salviifolia

This must be one of the most deliciously perfumed of all plant species. The flowers are produced in late winter or early spring and their delicate, enticing scent wafts for great distances. It is fast-growing (Palgrave 1977; Yeates 1942), but tends to become bare near the ground if not kept bushy when young by trimming. It is well suited as a rough hedge and shelter in places where rapid shelter is needed in windy situations (Yeates 1942).

Burchellia bubalina (Rubiaceae)

This species makes a lovely garden shrub and a handsome hedge (Keet *et al.* 1978). The glossy green leaves are attractive at all seasons and contrast well with the red flowers. The main blooming season is spring and summer but flowers appear on and off for most of the year, sometimes a heavy crop appearing in autumn (Palmer & Pitman 1972). The sweet nectar in the flowers attracts many species of birds (Palmer & Pitman 1972).

Buxus macowanii (Buxaceae)

A decorative, evergreen species that grows on a wide variety of soils. It forms an excellent, low formal hedge (King 1951). It is slow-growing (Palmer & Pitman 1972).

Caesalpinia bonduc (Fabaceae)

A thorny, scrambling shrub or climber that could be useful in the consolidation of a barrier. The thorns do not appear to be very effective. It could be used to cover a fence or wall and has been cultivated in India as a security hedge (Howes 1946).

Canthium obovatum (Rubiaceae)

This species has been cultivated as a garden hedge and a street ornamental (National Herbarium, Pretoria) and has been valuable in consolidating sand dunes (Palgrave 1977). The glossy foliage is attractive and the small fruit is popular with birds.

Capparis fascicularis (Capparaceae)

Has potential as an entangler since in its natural habitat it frequently scrambles over bushes and trees. It has small leaves which cast little to moderate shade and it is armed with effective, though small, thorns.

Capparis sepiaria

A spreading, much branched and robust plant that has potential as a framework plant. It is more compact in habit than most *Capparis* spp. and needs only occasional trimming (Howes 1946). It could perhaps be used as an entangler but may smother the framework plants. It could be useful as a fence scrambler and has been grown as a hedge around villages in India (Howes 1946). It is little browsed perhaps because of its spines (Palmer & Pitman 1972). Like other *Capparis* spp., its spines are vicious, occur in pairs flanking each leaf and are hooked sharply downwards.

Capparis tomentosa

On its own it could make an excellent framework plant (Figure 13A). Where there is support available, it tends to scramble and open up underneath. In a combination planting it is likely to shade out and smother non-scandent species. It could be used effectively as a fence reinforcer and has been used in southern Africa for security hedging (P. Goodman pers. comm.). Reputed to be poisonous to stock and yet to also provide palatable grazing for cattle (National Herbarium, Pretoria; Palgrave 1977). The flowers are large and very showy. The fruits are popular with vervet monkeys and are sometimes eaten by children (Palmer & Pitman 1972).

Carissa bispinosa var. *bispinosa* (Apocynaceae)

A small, rigid, densely-branching, very thorny shrub which remains dense at the base and does not open up with age. The spines are hard and stout and once- or twice-forked. Slow-growing (King 1951), makes an excellent, low, formal hedge suited to the dry regions. It is tougher and more compact than *C. bispinosa* var. *acuminata* which is best suited to the coastal belt and mist belt of the eastern Transvaal and Natal.

Carissa haematocarpa

A much branched, robust, extremely dense, twiggy and thorny plant that maintains ground density. It could make a sturdy short filler, provided it receives sufficient sunlight. It tolerates drier conditions than *C. bispinosa* var. *bispinosa*. Very slow-growing (Palmer & Pitman 1972); it could make an excellent low hedge in the dry regions (King 1951). It is likely that it can be propagated from seed and cuttings like *C. bispinosa* var. *bispinosa* and *C. macrocarpa*.

Carissa macrocarpa (= *C. grandiflora*)

The ideal security hedge plant for the coastal belt; also suited to the escarpment of the eastern Transvaal. It is naturally bushy right to the base, sturdy, has a dense close habit and formidable thorns (Figure 13B). It can be grown in full sun or in the shade of other plants. It is very fire-resistant and is difficult to cut through (D. Edwards pers. comm.). It is easily propagated from seed, cuttings, suckers and layers (Palmer & Pitman 1972; Von Breitenbach 1965) and grows rapidly under suitable conditions (Palgrave 1977). The white, starlike flowers (Figure 13C) are sweetly scented and most attractive against the dark green foliage. The fruit is an attractive red berry; it is edible, succulent, rich in vitamin C, calcium, magnesium and phosphorus, and makes an excellent preserve (Palmer & Pitman 1972). This species is widely cultivated as an ornamental shrub, hedge and windbreak, not only in southern Africa, but in many parts of the world (Howes 1946).

Carissa tetramera

A potential low, formal hedge, similar to *C. bispinosa* var. *bispinosa*. A compact, densely branching shrub with hard stems and thorns; it maintains ground density. It can probably be propagated from seed or cuttings.

Cassine reticulata (Celastraceae)

A stiff-leaved, evergreen shrub that has potential as a garden hedge. The young leaves are attractive, bright red turning dark green.

Cassinopsis ilicifolia (Icacinaceae)

A multi-stemmed, densely branching and heavily armed shrub in well-lit situations. It tolerates shade but then becomes lax with long, drooping, flexible branches. The young branches are armed with single, slender, very sharp spines. It is slow-growing (Palmer & Pitman 1972) and is a potential evergreen garden hedge plant for the moderately cold regions.

Cassinopsis tinifolia

A potential garden hedge; the leaves are glossy dark green above and paler below.

Catunaregam spinosa (= *Xeromphis obovata*) (Rubiaceae)

Frequently multi-stemmed, sturdy and spiny (Figure 13D). A potential framework plant which often grows in thickets.

Chaetachme aristata (Ulmaceae)

Has potential as a framework plant particularly in the moist, wooded regions. A denser growth habit should be obtainable by clipping. The wood is hard and tough, and resists axe and bulldozer (Palmer & Pitman 1972).

Chrysanthemoides monilifera (Asteraceae)

A spreading bush with slightly fleshy leaves and bright yellow, daisy-like flowers. It has been used as a garden hedge and windbreak (Palgrave 1977) and for driftsand stabilization (Fenn *et al.* 1973). It is known as boneseed in Australasia where it has become a pest. Caution should be exercised before planting it outside southern Africa.

Coddia rudis (= *Xeromphis rudis*) (Rubiaceae)

This species is usually an evergreen, multi-stemmed, much branched low shrub. It is often heavily browsed by cattle and goats, and the typical pyramid-shaped browse

FIGURE 13A.—*Capparis tomentosa*. A scrambling, very thorny species that could be used most effectively on its own.

FIGURE 13B.—*Carissa macrocarpa*. The forked spines are hard and sharp-pointed.

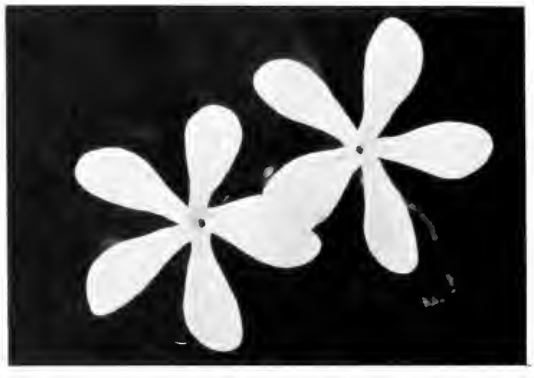


FIGURE 13C.—*Carissa macrocarpa*. The white flowers are sweetly scented and attractive against the dark green foliage.

FIGURE 13D.—*Catunaregam spinosa*. The branches are armed with hard and sharp-pointed, woody spines.

form of the shrub is good evidence that it reacts well to clipping (M.J. Wells pers. comm.). The leaves are attractive in most seasons.

Coleonema album (Rutaceae)

A much-branched shrub with aromatic leaves. It has been used as an unclipped hedge in the Cape (Eliovson 1965) and it makes a good internal or dividing hedge up to 1,5 m (Matthews no date).

Commiphora africana (Burseraceae)

A useful framework or short filler plant for the very dry regions. It is usually multi-stemmed with stout, woody spines and rigid branches in all directions. It grows easily in deep sand as well as shallow, stony soil and is easily propagated from seed and truncheons. It has been used as a security hedge plant in Chad, northern Cameroon (Seignobos 1980) and northern Nigeria (Howes 1946) where it forms an efficient barrier, especially when grown from truncheons. It is not considered poisonous by Watt & Breyer-Brandwijk (1962), although it is the host to one of the 'poison grubs' (*Diamphidia* sp.), from which Bushmen make their arrow poison. This particular grub feeds exclusively on *C. africana* (Palmer & Pitman 1972). No references to the foliage being browsed by stock and game have been found. The roots are eaten by elephants and porcupines.

Commiphora glandulosa

Usually a high-branching, single-stemmed thorny tree. Its usefulness lies in the fact that it is easily propagated from truncheons, is considerably drought resistant and is little used by animals. An effective barrier could be formed by planting well grown truncheons at an angle so as to form a mesh of interlocking branches. It is moderately fast-growing (Van Wyk, P. 1972) and has often been planted as a living fence (National Herbarium, Pretoria). Reputed to be poisonous (Watt & Breyer-Brandwijk 1962). In the Kruger National Park, elephants have occasionally been seen eating leaves and young shoots, while warthogs have been seen digging up the roots (Van Wyk, P. 1972).

Commiphora pyracanthoides

Usually a multi-stemmed, low, spreading spiny shrub which maintains ground density (Figure 14A & B). It is a useful plant for the very arid regions, but may form thickets. Its roots are deep and have a high water content which enables it to survive the severest droughts (National Herbarium, Pretoria; northern Transvaal farmer pers. comm.). It is easily propagated from seed and truncheons and has been used as a security hedge around kraals and cultivated lands in Venda and Sekukuniland (National Herbarium). It is a declared invader plant in Natal and the Transvaal. The berry is said to produce a stinging sensation in the mouth followed, after some days, by swelling and burning of the lips (Watt & Breyer-Brandwijk 1962). The root and gum are edible (National Herbarium). A prick from the spine may cause intense stinging of the skin (Mitchell & Rook 1979; northern Transvaal farmer pers. comm.). It is browsed by stock and game although one report states that it is avoided by browsers (National Herbarium).

Commiphora schimperi

Usually a single-stemmed, high-branching thorny tree that can be planted as truncheons to form a security hedge. Moderately fast-growing (Van Wyk, P. 1972); it has been grown as a live fence in South Africa (National Herbarium, Pretoria).

Commiphora woodii

Usually a single-stemmed, high-branching unarmed tree that can be planted as truncheons to form a security hedge. It has been grown as a live fence in South Africa (Von Breitenbach 1965).

Crotalaria capensis (Fabaceae)

This was one of the first South African species to be known to European gardeners and was cultivated in Vienna 200 years ago (Palmer & Pitman 1972). It has been planted as a hedge in South Africa (National Herbarium, Pretoria; Palgrave 1977; Palmer & Pitman 1972) and it is very colourful in the flowering season. The flowers are produced in summer and autumn in showy, pendulous sprays. The nectar is attractive to birds. The fruit is an inflated, cylindrical pod, which when dry, rattles in the wind. Where frosts are severe, it should be planted in a warm position, but it shoots up if frosted back (Eliovson 1965). In certain areas it is

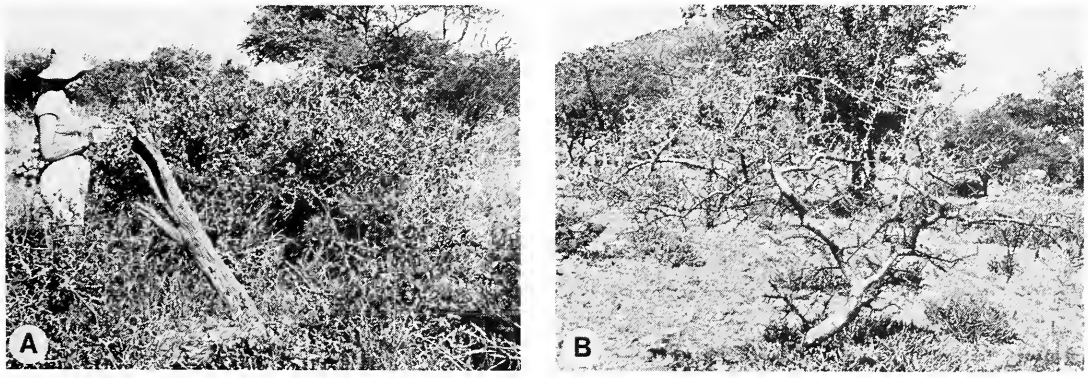


FIGURE 14.—*Commiphora pyracanthoides*. A, typical multi-stemmed form on deep sand; B, single-stemmed form on rocky terrain.

FIGURE 15.—*Dalbergia armata*. It is usually a scrambling shrub or strong climber with long, entangling stems.

FIGURE 16.—*Dalbergia armata*. The woody spines are hard and stout.

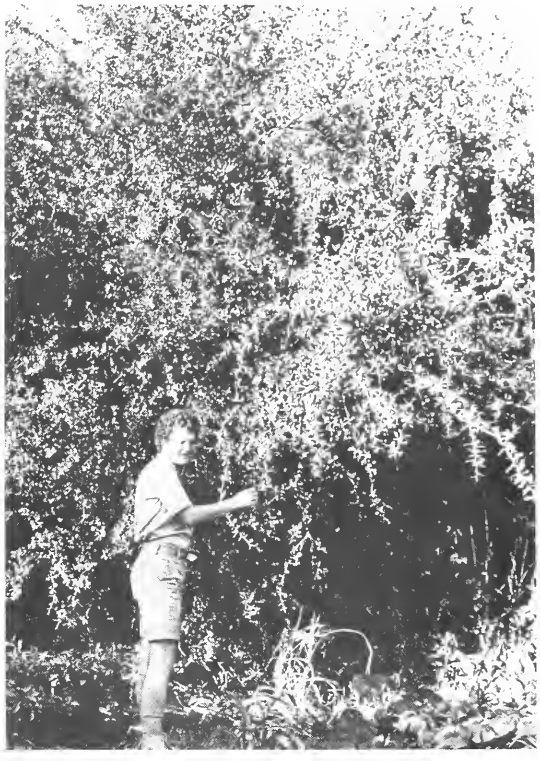


FIGURE 18.—*Dovyalis caffra*. With or without trimming it forms an impenetrable, dense hedge.

FIGURE 17.—*Dichrostachys cinerea* subsp. *africana*. A potential framework plant. It can, however, spread and become a serious pest in thicket form and is difficult to eradicate.

FIGURE 19.—*Dovyalis rhamnoides*. Sturdy and very spiny in well-lit situations.

reported to be poisonous to stock, but this may be due to confusion with another species, *C. burkeana*, which causes stiff-sickness in cattle (Palgrave 1977).

Curtisia dentata (Cornaceae)

A tall, fast-growing species in moist, forest conditions (Von Breitenbach 1965). In sunlight it tends to become bushy and could make a fine, tall, leafy hedge (Palmer & Pitman 1972).

Dalbergia armata (Fabaceae)

A potential entangler. It is usually a scrambling shrub or strong climber with long, entangling stems (Figure 15). The spines are hard and stout (Figure 16) but less effective in hooking than the sharp, hooked thorns of the *Acacia* and *Capparis* spp. The tiny flowers are grouped into clusters 100 mm long and when borne in profusion make a most attractive sight. As an entangler, it may become very dense and shade out other plants. It could be useful as a fence reinforcer.

Dichrostachys cinerea subsp. *africana* (Fabaceae)

It is very often a sturdy, multi-stemmed shrub (Figure 17) that maintains ground density and is armed with hard, stout spines. Not as densely branching as many of the *Acacia* spp. listed. Branches are flexible and tend to become very long with little secondary branching. It thrives in a wide range of climatic and soil conditions and is easily propagated from seed and grows quickly (Cunliff 1963). It has been used for security purposes in southern Africa (D. Edwards pers. comm.) but can become a serious pest in thicket form and is difficult to eradicate (Palmer & Pitman 1972). It is a declared invader plant in the Cape and Transvaal.

Diospyros austro-africana (Ebenaceae)

A much branched shrub or small tree growing in a wide variety of habitats. It is deciduous on the Witwatersrand (Tree Society of Southern Africa 1964) but likely to retain its leaves at the coast and in other, less harsh climates. It has potential as a low border (Stapleton 1940).

Diospyros dichrophylla

Usually a neat, rounded, multi-stemmed, evergreen bush. According to Palmer & Pitman (1972) it was cultivated in the gardens of the Dutch East India Company at the Cape in 1815 and was known in the gardens of Europe even earlier. It is still used for hedges on St Helena where it was introduced perhaps in the 18th century. The fruits are said to be poisonous (Palgrave 1977; Palmer & Pitman 1972).

Diospyros lycioides

A widespread, adaptable, hardy and attractive species. The foliage is usually deciduous, a unique bluish-green to dark green with beautiful autumn shades. The red fruits, up to 20 mm long, are very showy and can be produced in abundance. They are edible and sweet-tasting, but together with the leaves are said to be mildly poisonous on occasions (Palmer & Pitman 1972). The flowers are a good source of honey and are attractive to bees (Anderson *et al.* 1973). It should make a good hedge (National Herbarium, Pretoria) and serves as an effective windbreak (Dry 1970). It needs only the very minimum of water and care and grows extremely fast in cultivation (Dry 1970).

Diospyros whyteana

This species makes an excellent garden tree and an outstanding hedge. It was popular in the gardens of Europe nearly 300 years ago (Palmer & Pitman 1972). It is small and compact with ornamental, glossy, dark green, evergreen foliage. It is moderately fast-growing (Palgrave 1977; Von Breitenbach 1965), hardy, undemanding as to soil, thrives in shade and full sun and stands clipping (Palmer & Pitman 1972).

Dodonaea angustifolia (= *D. viscosa*) (Sapindaceae)

A proven, drought-resistant hedge plant (King 1951; Palmer & Pitman 1972 and many others). It is one of the few indigenous species to have been cultivated from early times and has been used in various parts of the world to bind sand or reclaim marshes (Palmer & Pitman 1972). The leaves secrete a gummy, sticky substance which makes them shine and which appears to make them unpalatable to browsers. It is moderately fast-growing (Poynton 1972).

Dovyalis caffra (Flacourtiaceae)

An excellent security hedge plant that can be used throughout the country except where frosts are severe; it has been described as 'one of the most useful hedge plants for the subtropics' (Howes 1946). It also makes an excellent shelterbelt (Van der Merwe *et al.* 1978) and could be planted for its fruit and nectar production alone (Poynton 1972). It is multi-stemmed, very sturdy and dense, with strong branches bearing stout thorns. It maintains ground density and, with or without trimming, it forms an impenetrable, dense hedge (Figure 18). It is easily raised from seed (D.S. Hardy pers. comm.) but does not strike readily from cuttings (Howes 1946). Growth is at first slow but soon increases. It can reach 2,5 m in 3 years (Howes 1946). The fruit is a berry the size of an apricot and has an acid flavour. It is used to make jam and marmalade, and can also make an excellent cattle fodder (Van der Merwe *et al.* 1978).

Dovyalis rhamnoides

A potential framework plant particularly for the coastal belt. In well lit situations it is sturdy, spiny (Figure 19) and maintains ground density. Similar to *D. caffra* but is unlikely to tolerate drought and frost. It is difficult to cultivate, cuttings do not strike readily and seed, which is produced sporadically in small quantities, soon loses its viability (Von Breitenbach 1965). The fruits are pleasantly acid-flavoured and much sought after to make excellent jellies and preserves (Palgrave 1977; Palmer & Pitman 1972).

Dovyalis zeyheri

A potential framework plant for the Transvaal Highveld. It is not as densely bushy as *D. caffra* and is more frequently a tree. Clipping should help to thicken the plant growth at the base. It is more difficult to cultivate from seed than *D. caffra*, but seed is often produced in large quantities (D.S. Hardy pers. comm.). Recommended by Smith (1966) for making security hedges. The fruits are pleasantly flavoured, although sometimes sour, but make a good jelly (Palgrave 1977).

The occasional foetid smell (Palgrave 1977; Palmer & Pitman 1972; National Herbarium, Pretoria) omitted by the plant would make it unsuitable for use in parks, gardens or in any close proximity to people.

Duvernoia adhatodoides (Acanthaceae)

This species has been in cultivation for a very long time, yet few gardens possess it today (Obermeyer 1962). It is a most attractive evergreen tree or shrub that makes an excellent hedge in moist, frostless areas near the sea (King 1951). The flowers are showy, ranging from white to mauve and beautifully marked with purple in the throat. They are densely crowded into spikes up to 150 mm long. The fruit is a capsule which dehisces explosively with a loud crack, hence the name pistol bush.

Ehretia rigida (Boraginaceae)

Usually a multi-stemmed, rigid and twiggy shrub. The drooping branches of some forms are reminiscent of the weeping mulberry. Other forms are very tangled, giving rise to the name 'deurmekaarbos'. Its adaptability to a wide range of soil and climatic conditions make it a potentially useful plant, especially as a garden hedge (Eliovson 1965). It suckers and can form dense thickets. It is unarmed, fast-growing and flowers young (Skinner (1980). Essentially evergreen, the leaves fall for a short time just before flowering. The flowers occur in dense, terminal heads and are a most attractive sight in spring. The fruits are very popular with birds.

Ekebergia capensis (Meliaceae)

A strikingly beautiful species in full flower and fruit. Often confused with *Harpephyllum caffrum*. The new leaves are red, turning a glossy dark green which is attractive throughout the year. It makes an excellent shade tree (Van Wyk, W.C.E. 1972), can be used as a windbreak (Poynton 1972) and a street tree (National Herbarium, Pretoria). Easily cultivated, it does particularly well in deep, sandy soil (Palmer & Pitman 1972). Young plants should be sheltered in highveld gardens (Eliovson 1965). Slow-growing (Poynton 1972) to moderately fast-growing (Palgrave 1977; Palmer & Pitman 1972; Van Wyk, W.C.E. 1972).

Entada spicata (Fabaceae)

A potentially excellent security hedge plant for the coastal belt and eastern Transvaal escarpment. It is a densely thorny plant probably avoided by browsers. The recurved thorns are arranged in five longitudinal rows along the branches and stems, and are scattered along the leaf petioles and raches. It is best used on its own in well lit situations. In shade and where there is support it tends to scramble and open up underneath. Propagation should be possible from seed.

Erica caffra (Ericaceae)

A fairly fast-growing evergreen shrub that makes an excellent low windbreak, and could be used as a satisfactory untrimmed hedge (Eliovson 1965).

Erythrophysa alata (Sapindaceae)

An ornamental, drought-hardy and sun-loving species. The attractive red fruits are 3-lobed, inflated capsules. It can be used as a large, informal hedge (King 1951).

Eugenia capensis (Myrtaceae)

Usually a much branched shrub with dense, glossy foliage. The fruit is a small berry which is pleasantly flavoured but sometimes rather acid. It should make a good, neat hedge in sandy, warm areas (Palmer & Pitman 1972), i.e. a similar use to the European myrtle to which it is related.

Eugenia natalitia

It has been planted as a hedge in northern Zululand (Palmer & Pitman 1972).

Euphorbia (Euphorbiaceae)

The succulent *Euphorbia* spp. deserve special attention. Some species very closely resemble the 'ideal' security barrier plant, being sturdy, armed with spines and having a milky latex that is highly irritant. In some species the latex is so toxic that it would serve as an immediate deterrent to any intruder. Southern Africa has many species of succulent *Euphorbia*, ranging from a few centimetres to more than 10 metres high. A security hedge could be made entirely from combinations of several species. The *Euphorbia* spp. are all very drought resistant and need little attention. The poisonous species could be used especially as browse-resistant barriers or used on the periphery of a barrier to protect palatable species. The poisonous *Euphorbia* spp. and thorny *Acacia* spp. could make a very effective and formidable combination planting (Figure 5). The *Acacia* thorns will readily tear into the *Euphorbia* causing the release of latex which is highly irritant to the skin and eyes. The poisonous species should not be planted near bee-hives since the honey produced is likely to be most unpalatable (Anderson *et al*. 1973).

Euphorbia avasmontana

A potential irritant filler on the edge or periphery of a barrier where it will receive sufficient sunlight. It maintains ground density and is very slow-growing (D.S. Hardy pers. comm.). The latex is highly irritant and has been used as a source of arrow poison (National Herbarium, Pretoria). It should be resistant to browsing. It must be handled with extreme caution because of the toxic latex.

Euphorbia cooperi

A potential irritant filler and framework plant. It maintains ground density for 10 to 15, or even 20 years (H. Matthysen pers. comm.) (Figure 20A). Thereafter it loses its lower branches and develops a long, clean trunk. The gaps formed by the loss of the lower branches can be filled with either young plants or cuttings of the same species. It is easily propagated from seed and truncheons. Branching can be induced by cutting off the terminal segments at the nodes. Truncheons should be taken in August or September. Under nursery conditions, plants can set seed after two years and a seedling will take about three years to reach 2 m in height. Under optimal conditions, a plant can produce four segments per year. Unlike many *Euphorbia* spp., *E. cooperi* can stand a lot of watering and responds to it provided the soil is well-drained (H. Matthysen pers. comm.). The latex causes extreme skin and eye irritation; is volatile and has been used as a fish poison (Watt & Breyer-Brandwijk 1962). Browsers avoid the plant (Van Wyk, P. 1974). It

must be handled with extreme caution because of the toxic latex.

Euphorbia grandialata

It closely resembles the 'ideal' security barrier plant. It is sturdy, spiny, maintains ground density and forms dense, spreading clumps up to 2,5 m high (Figure 20B). It is easily propagated from seed and truncheons. The latex appears to be very irritant and poisonous, with a powerful, unpleasant smell. It should be handled with extreme caution on account of the toxic latex. Honey made from the plant acts as a powerful laxative and the plant is avoided by animals and man (M. Meintjies pers. comm.).

Euphorbia grandicornis

It closely resembles the 'ideal' security barrier plant. It is an extremely spiny, succulent shrub which produces erect, stout branches from ground level (Figure 20C). The numerous spines are stout and up to 70 mm long (Figure 20D). The crown is spreading with an average spread of 2 to 5 m. According to one report it is a most tenacious plant and readily takes possession of an area once it gets a footing (National Herbarium, Pretoria). The author has on one occasion seen cuttings of this plant along a fence line in KwaZulu. It must be handled with extreme caution due to the poisonous milky latex in all parts of the plant. This latex causes vomiting and death in goats, extreme eye irritation and possibly blindness (Zulu man pers. comm.). It is browsed only by the black rhinoceros and is left untouched by domestic animals, even in heavily overgrazed and overbrowsed areas.

Euphorbia ingens

A potential irritant filler and framework plant. It is a single-stemmed tree with ascending branches and a very dense crown. Unlike *E. cooperi*, it does not maintain ground density when young and short fillers or cuttings will be necessary to fill in the lower gaps (see frontispiece). It must be handled with extreme caution as the toxic latex causes intense irritation and blistering of the skin as well as temporary or permanent blindness. The latex has also been used as a fish poison (Watt & Breyer-Brandwijk 1962). The plant is avoided by browsers (Van Wyk, P. 1974) although porcupines and cane rats are reported to eat the roots (Palmer & Pitman 1972). It has been used in Sekukuniland (Lebowa) as a live hedge around kraals and cultivated lands (see frontispiece).

Euphorbia ledienii

A potential irritant filler for the edge or periphery of a barrier where it will receive sufficient light. It produces numerous branches from the base and forms spreading clumps. Secondary branching is scarce and the clumps have an open appearance, thus precluding its use as a framework plant. It must be handled with extreme caution as the latex is irritant (Mitchell & Rook 1979; National Herbarium, Pretoria) and poisonous (Watt & Breyer-Brandwijk 1962). It is not generally eaten by animals (National Herbarium).

Euphorbia pseudocactus

It could be used as an irritant filler on the periphery of a barrier where it will receive enough sunlight. It is avoided by animals, even in overgrazed areas. This, and its close affinity to *E. grandicornis* (there is evidence of hybridization (National Herbarium, Pretoria)) suggests that it is both poisonous and irritant.

Euphorbia tirucalli

A potential framework plant. It does, however, open up at the base (Figure 20E) unless it is clipped regularly. The open spaces can be filled with cuttings, which take well, or with a shade-tolerant short filler. It spreads easily from plantings but is not considered a nuisance plant. It is easily propagated from seed, cuttings and truncheons (Palmer & Pitman 1972; Van Wyk, P. 1974), grows fast and in almost any soil (White *et al.* 1941). It has even been used to stabilize cyanide-treated mine dumps (National Herbarium, Pretoria). It has been widely used in Africa as a live fence around villages and cultivated lands (Figure 20F). It is usually avoided by browsers except the black rhinoceros (Palmer & Pitman 1972) and the occasional goat. Reports regarding the toxicity of the latex are contradictory. According to Watt & Breyer-Brandwijk (1962) it is highly irritant to the skin and can cause temporary blindness. P. van Wyk (1974) reports that it can prove fatal if sufficient is swallowed. Noyes (1913), from the rubber industry in Natal, reports that he saw no cases of blistering or anything else except temporary eye irritation due to crude latex getting into the eyes.

Euphorbia virosa

A spiny, succulent shrub which branches from ground level to form dense clumps up to about 2 m high and 3 m in diameter. It is sturdy and strong enough to be used on its own as a framework plant. It can also be interspaced in the barrier as an irritant filler. Probably a very slow-growing plant in its natural habitat. It is reputed to be one of the most poisonous plants in Africa. The latex is extremely irritant and virulently poisonous; it was used by the Namaqualand Bushmen and Gogo of east Africa as an arrow poison (Watt & Breyer-Brandwijk 1962). It is eaten with impunity only by the black rhinoceros. Plants must be handled with extreme caution on account of the toxic latex.

Euryops virgineus (Asteraceae)

A potential low hedge plant. The small, yellow flowers are produced in clusters at the ends of branches. It will need cutting back to prevent it becoming bare of leaves and open underneath. It will do best in well-drained soil and in a sunny position.

Ficus natalensis (Moraceae)

A large, spreading, densely leafy and shady tree that has been suggested as a windbreak for the southern Cape (Van der Merwe *et al.* 1978). It is usually evergreen but likely to lose its leaves under moisture stress. The fruit is a small fig about 10 mm in diameter, not suitable for human consumption because of its unpleasant taste, but eaten by birds (Van Wyk, P. 1972). It is apparently fast-growing (Van Wyk, P. 1972) and easily propagated from truncheons (Van der Merwe *et al.* 1978) and cuttings (Van Wyk, P. 1972).

Ficus sur (= *F. capensis*)

A large, spreading tree that is ornamental and shady.

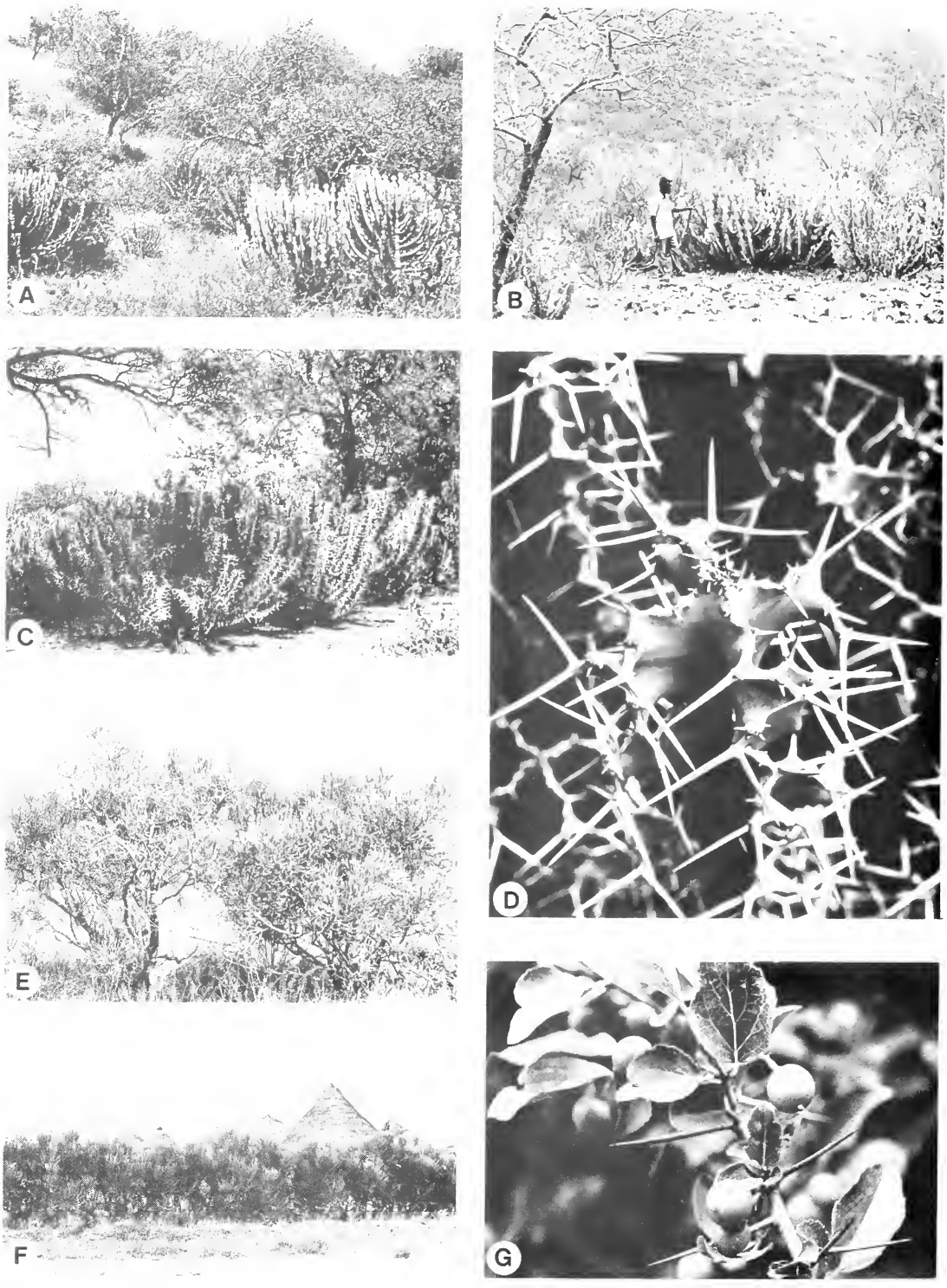


FIGURE 20.—A, *Euphorbia cooperi*. A potential irritant filler and framework plant. It maintains ground density for 10 to 15 years and thereafter develops a long, clean trunk; B, *Euphorbia grandialata*. A drought resistant, toxic plant that closely resembles the 'ideal' security barrier plant; C, *Euphorbia grandicornis*. A very spiny succulent shrub that is toxic, drought resistant and avoided by animals. A replacement for sisal (*Agave sisalana*); D, *Euphorbia grandicornis*. Heavily armed and exceedingly toxic; E, *Euphorbia tirucalli*. Unarmed and one of the least toxic of the *Euphorbia* species. It opens up at the base unless it is clipped regularly; F, *Euphorbia tirucalli*. Widely used in Africa as a live fence around villages and cultivated lands; G, *Flacourtia indica*. Armed with hard, woody spines. The fruit is a well flavoured but acid berry.

It has been suggested for use as a windbreak in the south-western Cape (Bands *et al.* 1973). The leaves are usually evergreen but are deciduous under moisture stress. The young leaves are a conspicuous and beautiful red. The fruit is a fig and is larger than most other wild figs. It is sweet, somewhat insipid and eaten by almost all fruit-eating birds (Palmer & Pitman 1972). It is moderately fast-growing (Bands *et al.* 1973) and easily propagated from truncheons (Palgrave 1977) and cuttings (Van Wyk, P. 1972). It has shallow, spreading roots which can be a nuisance in a small garden (Van Wyk, P. 1972). It coppices when felled (National Herbarium, Pretoria).

Flacourtia indica (Flacourtiaceae)

A sturdy, densely branching shrub or small tree that, like *Dovyalis caffra*, forms a close, impenetrable hedge, responding well to trimming (Howes 1946). It is much used as a security hedge plant in the West Indies and elsewhere (Howes 1946) and in South Africa as a garden hedge (Von Breitenbach 1965). The fruit is a well flavoured, but acid, berry (Figure 20G).

Freylinia tropica (Scrophulariaceae)

An attractive species which usually grows at high altitudes in cool, moist conditions; sometimes the roots actually stand in running water (Dyer 1959). It is slender, with rather loosely spreading branches. It has been used for a long time in its native habitat as a hedge plant (Dyer 1959).

Gardenia amoena (Rubiaceae)

A potential ornamental framework plant. In full sunshine it is usually a multi-stemmed, bushy shrub or small tree. It has short, rigid, spiny branches that are decussately arranged i.e. opposite each other, one pair at right angles to the next. The sweetly-scented flowers, up to 50 mm long, are white with pinkish-red on the corolla tube and undersurface of the petals. It probably has some resistance to drought but prefers moist sites. The best method of propagation is by cuttings which must be given bottom heat and plenty of moisture. Growth from seed is slow and seed should be sown in September (Eliovson 1965).

Gardenia cornuta

A small, densely branching tree with a twiggy crown. It is neat and decorative in flower and fruit. The white flowers, aging to yellow, have a sweet, heavy scent. Of the glossy, golden-yellow fruits it has been said that no other species in South Africa can compare with their beauty (Phillips 1943). The fruits are ovoid and measure up to 450 x 20 mm. They are often produced in profusion and remain on the tree for months.

Gardenia jovis-tonantis

A rigid, spreading shrub or tree. The showy, white flowers turn yellow with age.

Gardenia resiniflua

A small, much branched, drought-hardy species with attractive flowers.

Gardenia thunbergii

A potential hedge, screen and windbreak plant. The large, sweetly-scented white flowers and the large, shining fruits are very decorative. It is very slow-growing (Eliovson 1965; Palmer & Pitman 1972; Von Breitenbach 1965).

Gardenia volkensii (= *G. spatulifolia*)

A potential hedge, screen and windbreak plant, or an exceedingly sturdy framework plant for a security barrier. It is a many branched, rigid tree or shrub with a spreading crown. It has a short, sturdy trunk or is multi-stemmed, especially in deep sand. Its large, spreading habit makes it unsuitable for small gardens. The white flowers are large, short-lived and become yellow with age. The flowering season may last a month or two. It does well in deep, loose sand. Large quantities of viable seed are produced and seed germinates easily if sown fresh. Moderately fast-growing; a tree at Skukuza grew to 3 m in seven years (Van Wyk, P. 1974).

Grewia flavescens (Tiliaceae)

A shrub with 4-angled stems, drooping branches and attractive yellow flowers. It is a declared invader plant in the Cape and Natal.

Grewia occidentalis

A moderately hardy, often multi-stemmed shrub, with a long flowering period. The mauve flowers measure about 30 mm in diameter and occur in small clusters. The small fruit is 4-lobed, square-shaped and edible, but dry. It is easily propagated from seed, cuttings and layering (Palmer & Pitman 1972). It makes a good, informal hedge (Van der Spuy 1957).

Greyia sutherlandii (Greyiaceae)

A strikingly beautiful species in flower, similar to *Erythrina* spp. (coral trees or kafferbome). The red, bell-shaped flowers are produced in dense spikes up to 120 mm long, during autumn and winter when it is without leaves. In autumn the leaves turn shades of bright red. It is slow-growing (Poynton 1972) to fairly fast-growing under suitable conditions (Palgrave 1972). It will stand all but the most severe frosts and grows in fairly poor soils, but they must be well drained. It could make a most decorative, informal hedge or partition in the garden, easily established from cuttings or suckers.

Halleria lucida (Scrophulariaceae)

A hardy, attractive shrub which flourishes under a wide range of conditions. It can flower at one year of age when less than 1 m high (Palmer & Pitman 1972) and is attractive to a wide range of birds. It is easily propagated from seed, cuttings and layering (Palmer & Pitman 1972) and can be clipped into a nice hedge (Sim 1919). It has been suggested as a hedge plant in the humid lowveld of the eastern Transvaal and eastern slopes of the Drakensberg (Keet *et al.* 1978).

Harpephyllum caffrum (Anacardiaceae)

A handsome, evergreen tree that is similar to, and often confused with, *Ekebergia capensis*. It can be used as a trimmed hedge (Eliovson 1965), as a living fence (Palmer & Pitman 1972), a windbreak (Haigh & Wilhelmij 1973; Poynton 1972; Van der Spuy 1957), or background tree in a large garden or street tree (Palmer & Pitman 1972). According to Poynton (1972) it is rather indifferent as a windbreak. Mature trees branch rather

high above ground level and branches turn up at an angle after leaving the trunk. The sexes are separate on different trees. The red fruit is thinly fleshy and up to 250 mm long. It is rather sour, relished by children, makes a good rosé wine and also a jelly (Palgrave 1977).

Hibiscus ludwigii (Malvaceae)

An attractive species that has been used as a hedge (National Herbarium, Pretoria). The yellow flowers have maroon centres.

Hibiscus pedunculatus

A slender-growing, perennial shrub with sparse branching. It can be clipped into form (Sim 1919) and has potential as a low, decorative hedge. The beautiful pink flowers measure up to about 50 mm long and are produced almost continuously throughout the summer. Small hairs on the stems and leaves can irritate the skin. The irritation is mechanical and not chemical.

Hibiscus tiliaceus

This species has been in cultivation in many parts of the world for at least 200 years. It has been used as a hedge on the Natal South Coast and as a street tree in Durban (Palmer & Pitman 1972). The flowers are large and showy, yellow aging to apricot, with a deep maroon or blackish centre. They are produced freely but are short-lived.

Hippobromus pauciflorus (Sapindaceae)

A densely leafy, much branched shrub or small tree. It is often multi-stemmed. It has occasionally been planted as a hedge in Zululand (Palmer & Pitman 1972). All parts of the tree have a strong aromatic, but not unpleasant, scent when bruised or crushed. Bryant (1909) and Watt & Breyer-Brandwijk (1962) state that the plant is poisonous, particularly the leaves.

Homalium rufescens (Flacourtiaceae)

A much branched shrub. The small, sweetly-scented flowers are produced in showy profusion.

Hypericum revolutum (= *H. lanceolatum*) (Clusiaceae)

A beautiful, evergreen, very frost-hardy shrub that can be clipped into a hedge (Eliovson 1965). The bright yellow flowers are showy and are produced sporadically at most times of the year. It gives off a distinct and very powerful smell of curry and it should therefore not be planted too close to a house in case the smell becomes overpowering. It suckers from the roots and can be propagated by division of the root (Eliovson 1965).

Jubaeopsis caffra (Arecaceae)

A distant relation of the coconut palm (Wicht 1969) and a protected plant, occurring naturally only in the Transkei. The fruits measure about 20 mm in diameter and closely resemble little coconuts, both in smell and taste (Palgrave 1977). It is always multi-stemmed and becomes low and bushy when exposed to sea winds (National Herbarium, Pretoria). It has potential as a low windbreak or screen at the coast. It has been successfully propagated from seed especially in the United States of America where it is in great demand as a miniature palm (Palgrave 1977).

Kiggelaria africana (Flacourtiaceae)

A widespread and adaptable species that makes a fine shade tree and windbreak (Palmer & Pitman 1972; Von Breitenbach 1965). It is robust, squats firmly on the ground, has a spreading, rounded crown and usually dense, evergreen foliage. On the Witwatersrand it may lose its leaves for a very short time just before spring (Tree Society of Southern Africa 1964). It is moderately fast-growing (Poynton 1972). It is the foodplant of a common *Acrea* butterfly and by encouraging these attractive insects, can add an extra dimension to a garden (M.J. Wells pers. comm.).

Lannea discolor (Anacardiaceae)

This species shares with the *Commiphora* species the name 'never die' or 'live-long' since truncheons planted in the ground strike easily. The leaves are dark green on their upper surfaces and white below. They are striking in both colour and texture.

Lebeckia macrantha (Fabaceae)

A potential tall filler, not because of its height (up to 2,5 m) but because of its twiggy crown of spine-tipped, almost leafless branches which casts virtually no shade. It is usually multi-stemmed. An extremely drought-resistant plant. It will not tolerate a heavy summer rainfall or hail storms but will tolerate more moisture during winter than in summer (Eliovson 1965).

Leucadendron (Proteaceae)

Generally speaking, members of the Proteaceae are not suitable for hedges. They are relatively short-lived and clipping tends to spread fungal infections, causing them to die off patchily (M.J. Wells pers. comm.).

Leucadendron coniferum

A potential low, decorative hedge. The bracts surrounding the flowerhead are bright yellow. The leaves are often tinged with red.

Leucadendron platyspermum

This species has been used as a hedge (Smith 1966).

Leucadendron salicifolium

This species always grows in very wet places, even in poorly-drained soils such as swamps and vleis (National Herbarium, Pretoria). It characteristically forms almost hedge-like screens along the banks of streams (Palgrave 1977). Male plants are very attractive and bright yellow or orange in the flowering season. It has been used as a hedge (Smith 1966).

Leucadendron salignum

This species has been used as a hedge (Smith 1966). It is a large bushy shrub and is very showy in August and September when the leaves near the tips of the branches turn a light golden-yellow. The male plants are showier than the females for they are a brighter yellow and the flowers are golden (Eliovson 1965).

Leucadendron uliginosum

This species has been used as a hedge (Smith 1966).

Loxostylis alata (Anacardiaceae)

Recommended by King (1951) as a large, informal hedge. It can also form a neat, clipped hedge (King 1951; Van der Spuy 1957). It is showy in full flower and the young leaves are an attractive reddish-bronze. It grows easily and quickly and can reach a height of 3 m in 10 years (Van Wyk, W.C.E. 1973).

Lycium (Solanaceae)

The *Lycium* spp. have great potential as hedge plants in the very cold and dry regions. Their twigs and leaves, however, are generally relished by stock and will have to be protected in the early stages of growth.

Lycium afrum

Reputed to make an excellent drought and frost-resistant, stock-proof barrier (Von Breitenbach 1965). It is usually a multi-stemmed, rigid, twiggy shrub with stout, upright stems and branches ending in sharp, spiny points. It has small, needle-like leaves that cast virtually no shade. It does not deteriorate or develop gaps when neglected. Roots may travel 6 to 9 m laterally, so the plant is unsuited as a garden hedge. The hard wood is difficult to trim, and trimmings left lying about can injure the feet of stock, such injuries being slow to heal. Branches blow off in high winds and may become entangled in sheep's wool (Howes 1946). It is easily raised from seed (Von Breitenbach 1965) and fast-growing (Palgrave 1977). It has been used as a hedge plant in south and east Africa, parts of Australia and New Zealand. It has, however, become a pest in parts of Australia (Howes 1946) and therefore caution should be exercised before planting it outside South Africa (where it is kept in check by its natural enemies).

Lycium ferocissimum

Very similar in appearance to *L. afrum* and is also reputed to make an excellent stock-proof barrier that does not open up with neglect (Yeates 1942). It is a valuable shelterbelt plant for the very cold and dry regions. The hard wood is difficult to trim and the spines are liable to injure stock and workers (Yeates 1942). The fruits are edible, but have been suspected on more than one occasion of poisoning humans and pigs, the symptoms being those of narcotic poisoning (Watt & Breyer-Brandwijk 1962). The spine is also said to be slightly poisonous. Moderately fast-growing, it has been used in Australia and New Zealand as a security hedge and for shelter (National Herbarium, Pretoria; Yeates 1942). Like *L. afrum*, it has become a pest in southern Australia and parts of New Zealand and therefore caution should be exercised before planting it outside South Africa.

Lycium hirsutum

Similar to the two preceeding species and has potential as an excellent drought- and frost-resistant hedge plant. It can be used as a short filler since it tolerates light shade.

Lycium oxycarpum

Can be used as a framework plant but is not very sturdy. It may be most effective as a tall filler in combination with a species such as *Scutia myrtina*. The shade cast is light. The seed germinates easily, the plants are quick-growing — at least in the early stages — and they are completely hardy. It was used by the early colonists in South Africa to make garden hedges and living fences around kraals to keep out wild animals (Palmer & Pitman 1972).

Lycium prunus-spinosa

A rigid, twiggy, densely-branching and spiny shrub that could make an excellent drought- and frost-resistant framework plant or short filler.

Maclura africana (= *Cardiogyne africana*) (Moraceae)

Its scandent growth habit makes it a good consolidation plant and this, together with its sharp, woody spines, makes it exceedingly difficult to get through. A spine-prick causes an irritant, burning sensation. Under suitable conditions it can form an effective barrier after five years and it has been used as a security hedge plant in Mozambique (D. Edwards pers. comm.).

Maerua cafra (Capparaceae)

An ornamental, evergreen, hedge plant (Eliovson 1965). The sweetly-scented and delicate, spidery blooms are produced in clusters towards the ends of the branches. It starts to flower when small and grows well and fairly rapidly in cultivation (Palmer & Pitman 1972).

Maytenus capitata (Celastraceae)

This species has potential as a very sturdy framework plant or short filler. Usually multi-stemmed and rigid with dense branching and exceptionally strong and sharp-pointed spines. It forms clumps 2 to 5 m in width and would seem to be resistant to trampling. It maintains ground density and casts only light shade.

Maytenus heterophylla

One of the commonest, most widespread and variable species in southern Africa. It has adapted to a wide range of soil and climatic conditions and for this reason alone is well worth cultivating. It is usually a rugged shrub with hard, tough wood and robust spines (Figure 21). Pricks from spines are said to become inflamed (Palmer & Pitman 1972). In full bloom, it is an arresting sight. Unfortunately, the flowers usually have a strong foetid odour. Sometimes the flowers have no scent and occasionally they are sweet-smelling. In the Kruger National Park it is browsed by various species but the undamaged condition of the plants indicates that utilization is minimal (Van Wyk, P. 1974). It can spread in overgrazed land. Clipping should encourage a denser basal growth and so overcome its tendency to open up underneath. Seed germinates well but young plants grow very slowly (Van Wyk, P. 1974). It has occasionally been used as a live fence, but more often the severed branches have been used to enclose kraals and cultivated lands. It has been used as a garden hedge (National Herbarium, Pretoria) and has potential as a low windbreak or shelterbelt.

Maytenus polyacantha

Usually a multi-stemmed shrub which, in the eastern Cape, is sturdy and heavily armed with hard, sharp spines. The plants in the Orange Free State and Transvaal are shorter and less sturdy with slender spines. The eastern Cape form could make an excellent framework plant and a short filler, particularly if it is clipped. It can form

dense, spreading thickets. It has been used as a low garden hedge (National Herbarium, Pretoria).

Maytenus senegalensis

Usually a sturdy, multi-stemmed thorny shrub which often grows in thickets. It is a potential garden hedge. Apparently not browsed in Mkuze Game Reserve (P. Goodman pers. comm.). In parts of KwaZulu where the land is overgrazed it is one of the few shrubs to be seen. It can spread in overgrazed areas and is a declared invader plant in Natal.

FIGURE 21.—*Maytenus heterophylla*. Armed with hard, sharp-pointed spines. The flowers are attractive but usually have an unpleasant smell.

Melianthus comosus (Melianthaceae)

Attractive in flower and fruit but the crushed plant has a disagreeable smell, hence the Afrikaans name 'kruidjie-roer-my-nie'. The leaf and root are believed to have caused fatal human poisoning (Sapeika 1944). It has been used as a hedge (National Herbarium, Pretoria).

Mimusops caffra (Sapotaceae)

This species occurs naturally at the coast on sand dunes where it is fully exposed to sea winds and salt spray. It is a valuable sand-binder and would be useful as shelter to seaside houses and caravan parks. The orange-red fruit has a sweet, starchy pulp and agreeable flavour (Palmer & Pitman 1972).

Mucuna coriacea subsp. *irritans* (Fabaceae)

A potentially excellent irritant filler. The highly irritant hairs would act as an immediate deterrent to an intruder. These hairs occur on the pods and to a much lesser degree, on the leaves. The irritation and pain may last for a week or more (Mitchell & Rook 1979; Smith 1966). The hairs are impossible to remove from clothing and such clothing is best burnt or discarded (D.S. Hardy pers. comm.). Plants must be handled very carefully and their presence in the barrier could restrict upkeep such as trimming of framework plants. It would not be suitable for use in close proximity to offices and buildings since the irritant hairs can be carried by the wind. Propagation should be fairly easy from seed.

Mundulea sericea (Fabaceae)

This is a most attractive plant with light green to silvery-green foliage and mauve, lilac or purple flowers. According to Eliovson (1965) it will start flowering at a height of about 0,45 m. It can form a neat, clipped hedge. It is very drought-hardy and moderately frost-hardy but should be given a warm, sunny position in very cold areas (Eliovson 1965). It is slow-growing (Palmer & Pitman 1972). The bark, roots and seeds are widely used as fish poison, but the leaves are still eaten by wild and domestic animals (Palmer & Pitman 1972).

Myrsine africana (Myrsinaceae)

A very frost-hardy plant that has even been grown at Kew Gardens in London without any protection in winter (Eliovson 1965). The small, dark, glossy green leaves and red berries are attractive. It is neat and compact and can form a low hedge (Eliovson 1965; Keet *et al.* 1978; Poynton 1972).

Nylandtia spinosa (Polygalaceae)

A compact, spiny shrub that has potential as a short filler for the very cold and dry regions.

Nymania capensis (Meliaceae)

An attractive and very drought-hardy plant that occurs naturally in the driest parts of South Africa. It is common in Namaqualand, the Richtersveld and the Karoo. It will not survive for long in high rainfall areas (Palgrave 1977) and it needs well-drained soil. The fruits are very decorative, red, inflated capsules that hang from the plant like Chinese lanterns.

Obetia tenax (= *Urera tenax*) (Urticaceae)

A potential irritant filler which casts little shade. Although it is deciduous, it is still effective in winter due to irritant hairs on the stems and branches. The flowers, which appear before the leaves, are densely coated with hairs. Softly woody and sparsely branching, it would offer little physical resistance to an intruder. It is easily propagated from seed and cuttings (Van Wyk, P. 1972; Von Breitenbach 1965). It is recommended by Van Wyk, P. (1972) as a security barrier due to the highly irritant hairs which occur on all parts of the plant, especially the leaves (Figure 22A). These hairs cause an immediate and intense burning of the skin and sometimes blistering. Browsed only by the black rhinoceros (Palmer & Pitman 1972).

Ochna natalitia (Ochnaceae)

This species has been used as a hedge in South Africa (National Herbarium, Pretoria). The foliage, flowers and fruit are attractive. The young leaves are copper-coloured. The fruit is black with a red calyx.

Ochna serrulata (= *O. atropurpurea*)

This species is a proven performer as a clipped hedge (Stapleton 1940) and makes a colourful, informal hedge, attractive at all seasons of the year (Van der Spuy 1957). The foliage, flowers and fruit are attractive. The young leaves are pinkish-bronze. It starts flowering at a height of about 0,45 m (Eliovson 1965) and the fruit is black with a red calyx. It is fairly slow-growing, will grow in poor soil and in arid places but requires plenty of water throughout the year to look attractive, fresh and leafy (Eliovson 1965). The fruits are a major source of food for birds (Spence 1975).

Olea capensis subsp. *macrocarpa* (Oleaceae)

This species can be used as a windbreak (Poynton 1972). Unlike the following species it has little resistance to drought and frost. It is slow-growing, about 0,3 m per annum or less (Poynton 1972).

Olea europaea subsp. *africana* (= *O. africana*)

The wild olive is one of the most widespread species in southern Africa and through its natural distribution it endures the utmost extremes of climate and soil conditions. Under good conditions it usually has a dense, round and symmetrical, spreading crown supported by a sturdy trunk. It makes a satisfactory clipped hedge (Poynton 1972; Stapleton 1940) and is valuable as a low windbreak and screen and for ornament in arid regions (King 1951). It makes a neat, formal-looking street tree. It grows well in cultivation although growth rate is generally slow, about 0,3 m per annum or less (Poynton 1972). It is suitable for all parts of South Africa except where frosts are very severe.

Oncoba spinosa (Flacourtiaceae)

An ornamental, evergreen hedge plant for the warm frost-free regions. It is a heavily armed, spreading bush (Figures 22B & C) that will grow in both full sunshine and full shade. The flowers are large, showy and fragrant. It has been cultivated for ornament and as a hedge (Eliovson 1965).

Parkinsonia africana (Fabaceae)

Has potential as an extremely drought-resistant tall filler. It is a rather straggly shrub or small tree with an open crown and sparse foliage (Figure 22D). The branches are beset with stout, vicious thorns. The attractive, small, yellow flowers are borne in clusters along the stem.

Pavetta lanceolata (Rubiaceae)

This species makes a beautiful garden shrub and an excellent hedge (King 1951; Van der Spuy 1957). The white, sweetly-scented and very showy flowers are produced at Christmas time. The leaves are always neat and attractive. It is the food plant of the attractive 'hummingbird' hawk moth (M.J. Wells pers. comm.).

Peddiea africana (Thymelaeaceae)

Similar looking to *Pavetta lanceolata*, but with less attractive flowers. Recommended as a garden hedge and windbreak for the Natal south coast (Nicholson 1970). It is a shade-loving species with attractive, dark green, glossy foliage. There are reports that the plant is poisonous (Palmer & Pitman 1972) and that it has been used for homicidal purposes by natives (Sapeika 1944). Steyn (1934), however, reports that, in an experiment in which 100 g of dried material was administered to a sheep, no ill effects were produced.

Phaeoptilum spinosum (Nyctaginaceae)

A potential framework or short filler plant for the very dry regions. It is a multi-stemmed, compact and spiny shrub with entangling, drooping branches. Reports of its palatability are contradictory. One report in the National Herbarium in Pretoria states that it is immune

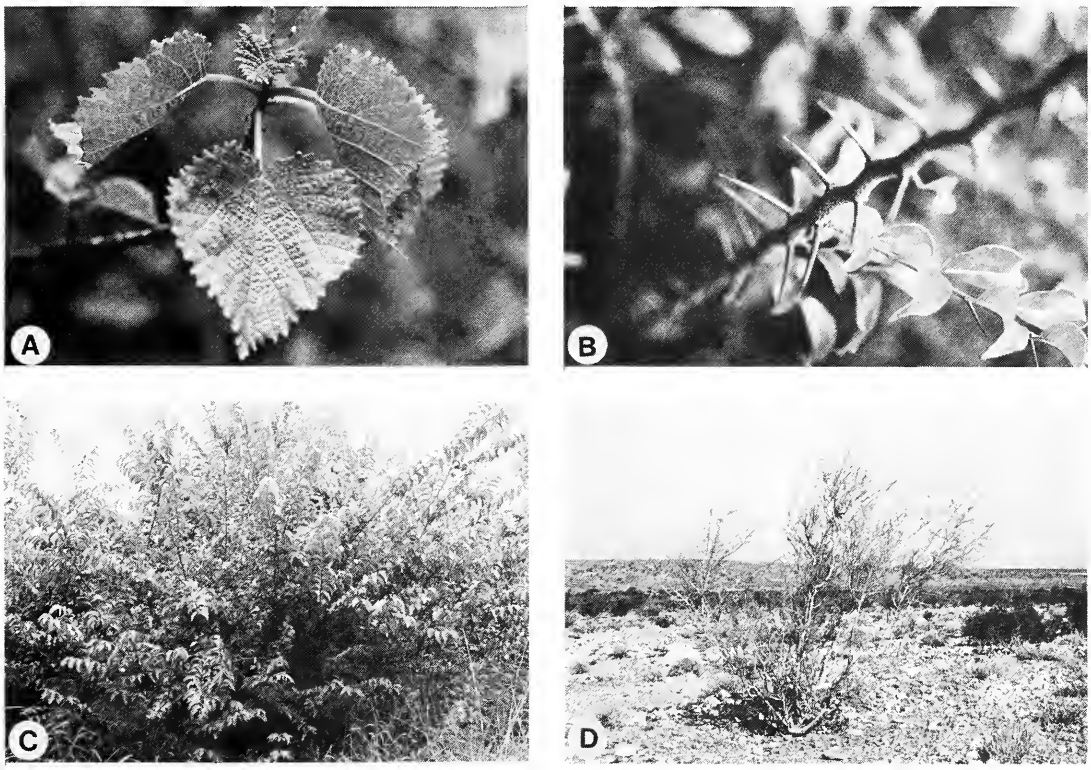


FIGURE 22.—A, *Obetia tenax*. A potential irritant filler. Irritant hairs occur on all parts of the plant, especially the leaves; B, *Oncoba spinosa*. A heavily armed shrub; C, *Oncoba spinosa*. A densely foliaged, spreading shrub that will grow in both full sunshine and deep shade; D, *Parkinsonia africana*. A potential tall filler. It is exceedingly drought resistant, has fine foliage and vicious thorns.

from browsing by goats and another claims that it is an excellent fodder bush.

Phoenix reclinata (Arecaceae)

A potential evergreen and ornamental screen especially for water-logged soils. It sometimes grows as a stemless, suckering bush, sometimes with short multiple stems and occasionally as a many-stemmed tree. As a multi-stemmed, suckering bush it would be most effective as a security barrier. It is sturdy, spreading, maintains ground density and has large, tough leaves, the lowermost leaflets being reduced to spines. These spines are hard, sharp-pointed and carry irritants that can cause severe wounds (M.J. Wells pers. comm.). The flowers of male plants form large, showy, cream-coloured sprays. The tough leaves are usually eaten only by elephants, but in times of drought, by other browsers as well. It is easily propagated from seed and suckers, and transplants well (Palgrave 1977; Van Wyk, P. 1972). It adapts to a wide range of conditions and need not be planted close to water, but prefers moist conditions (Van Wyk, P. 1972). It is slow-growing in the National Botanical Gardens in Pretoria, but should be considerably faster in warmer, moister conditions.

Pisonia aculeata (Nyctaginaceae)

A strong climber with hard, recurved thorns. It is a potential entangling plant for the coastal belt but may shade out other species. It could be used as a fence reinforcer and has been used as a security hedge in the tropics (Howes 1946).

Pittosporum viridiflorum (Pittosporaceae)

A hardy, neat and attractive species in flower and fruit. The flowers have a jasmine- or citrus-like scent and are produced in profusion in spring. The fruit is a small, creamy-brown to orange capsule that splits open to release bright red, resinous seeds. It can be used as a hedge (Eliovson 1965; Keet *et al.* 1974; Palmer & Pitman 1972), windbreak (Van der Spuy 1957) and screen. It is recommended for use on the Witwatersrand. It is slow-growing, about 0,3 m per annum or less (Poynton 1972).

Plumbago auriculata (= *P. capensis*) (Plumbaginaceae)

An attractive, very drought-resistant species that is undemanding as to soil, stands neglect and makes a charming, informal hedge. It will flower almost throughout the year provided it is not trimmed too severely. It does, however, sucker freely and tends to spread in gardens (King 1951). It is a food plant of small 'blue' butterflies, and they are almost always in attendance (M.J. Wells pers. comm.).

Podocarpus elongatus (Podocarpaceae)

A potential evergreen hedge or low shelterbelt. The seed is bluish-green with a scarlet-coloured, fleshy base. It is usually produced in large quantities and then makes a fine sight.

Podocarpus falcatus

The Outeniqua yellowwood occurs naturally in the high, moist forests of the southern Cape, in wooded ravines, mountain forest and coastal swamp forest (Palgrave 1977). It can be used as a windbreak and a trimmed hedge, although it is somewhat indifferent for both purposes (Poynton 1972). It is one of the fastest-growing indigenous trees. According to one report a tree of 20 years had reached a height of 21 m (National Herbarium, Pretoria). Poynton (1972) gives an average growth of 0,6 m per annum.

Podocarpus henkelii

Henkel's yellowwood is a handsome, evergreen tree with a dense, somewhat spreading crown supported by a tall, straight trunk. The attractive, drooping foliage is spirally arranged and a shiny, dark green. It retains its dense foliage to the ground when lit sufficiently from the side. It is suitable as a shade and ornamental tree in streets, parks and gardens throughout the more humid parts of South Africa where frost is not too severe. It makes an excellent windbreak (Poynton 1972), screen or a neat, clipped hedge. It is slow-growing, about 0,3 m per annum or less (Poynton 1972).

Podocarpus latifolius

The real yellowwood makes a moderately good windbreak and can be used as a trimmed hedge (Poynton 1972). It is appreciably frost-hardy, growing naturally on exposed mountain slopes at such cold localities as Harrismith in the Orange Free State, and Dullstroom and Wakkerstroom in the Transvaal, but then its growth is considerably stunted. It grows as a tall tree in high forest. It is slow-growing, about 0,3 m or less per annum (Poynton 1972).

Polygala myrtifolia (Polygalaceae)

This species makes an attractive evergreen hedge that responds well to clipping (Palmer & Pitman 1972). It is a variable species, mainly in the size and shape of the leaves, and consequently propagative material should be selected from the most attractive forms (Verdoorn 1957). It is a prolific bloomer, flowering throughout the year in Natal and from August to November in the Cape (National Herbarium, Pretoria). It has become an invader in coastal areas of Australasia and should be used with caution outside South Africa (M.J. Wells pers. comm.).

Portulacaria afra (Portulacaceae)

An excellent garden shrub and hedge plant for the hot, dry, frost-free areas. It is evergreen, fast-growing (Palgrave 1977) and makes a neat, compact hedge if clipped regularly, and an informal, unclipped screen or partition. It is an effective sand-binder and provides excellent and valuable fodder (Palgrave 1977). It could be tried as a border to paddocks. It is a honey plant in the eastern Cape and Little Karoo (Anderson *et al.* 1973).

Protasparagus (Liliaceae)

Potential entanglers, when given support they tend to scramble. They have sparse foliage which casts little shade and are armed with hooked spines which are generally hard and sharp-pointed. The spines cannot compare with, for example, the thorns of the *Acacia* spp. *Protasparagus capensis* (Figure 23) sometimes has extremely effective spines — they occur in threes and range from extremely hard, sharp and recurved to straight and soft. They are apparently not vigorous growers with some species, for example *P. laricinus*, having a perennial root system but annual (deciduous) stems (A.A. Obermeyer pers. comm.). This condition may not pertain to

all species but is most likely to occur in those species subjected to extreme dry and/or cold conditions.

Protasparagus aethiopicus (= *Asparagus aethiopicus* var. *aethiopicus*)
Protasparagus africanus (= *Asparagus africanus*)
Protasparagus angusticladus (= *Asparagus aethiopicus* var. *angusticladus*)
Protasparagus capensis (= *Asparagus capensis*)
Protasparagus krebsianus (= *Asparagus krebsianus*)
Protasparagus laricinus (= *Asparagus laricinus*)
Protasparagus racemosus (= *Asparagus racemosus*) (= *Asparagus saundersiae*)

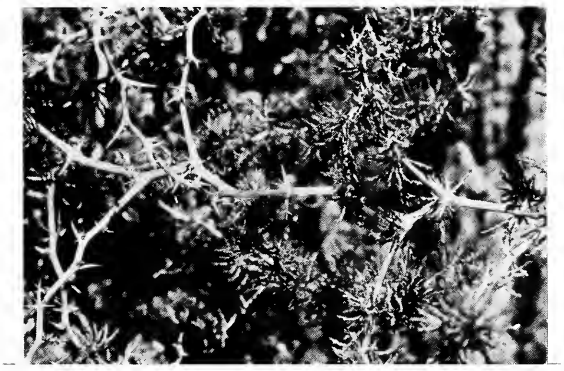


FIGURE 23.—*Protasparagus capensis*. A potential entangler. It has fine foliage and vicious, hooked spines.

Pterolobium stellatum (Fabaceae)

It could make an excellent framework for a security barrier. In a combination planting, however, its dense, scandent growth may smother other species. It has been used as a living fence in the Transvaal, and according to one report it promises to be of use in stopping erosion of dongas (National Herbarium, Pretoria). It is an attractive plant in flower and fruit. The brilliant red pods are produced in July and August and remain for several months.

Putterlickia pyracantha (Celastraceae)

A potential framework plant or short filler on the edge of a barrier. Similar to *Maytenus capitata* and *M. polyacantha*, but less robust. Its spines are also not as hard and break more easily. A spine-prick causes a burning sensation (Palmer & Pitman 1972). The fruit is an ornamental, red, woody capsule. It is slow-growing, but once established it grows easily and is a valuable hedge plant in dry districts (Eliovson 1965).

Putterlickia verrucosa

A potential framework plant or short filler for the moist, frost-free areas, particularly the coastal belt. It tolerates shading but then becomes open and straggly in habit, becoming an effective entangler. A spine-prick can cause a burning sensation and inflammation of the skin. The fruit is an attractive, red, woody capsule. It can be grown easily from cuttings (D.S. Hardy pers. comm.). It grows very slowly in the National Botanical Garden in Pretoria but should be faster-growing in hotter and moister regions.

Rapanea melanophloeos (Myrsinaceae)

A hardy, attractive and easily cultivated species (Palgrave 1977). It is moderately fast-growing, about 0,6 m per annum and can be used as a windbreak (Poynton 1972).

Raphia australis (Arecaceae)

This magnificent palm with leaves up to 9 m long has potential as a windbreak or screen for the hot and moist coastal belt. It is naturally a swamp-dweller and in cultivation will grow fast where plenty of water is available (Wicht 1962). It is said to reach a height of 12 to 15 metres in 20 to 40 years from seed (Obermeyer & Strey 1969). It is one of the few members of the palm family that flowers once and then dies, its average life span being 25 to 30 years (Wicht 1969). The natural distribution of this species coincides with that of the palm nut vulture, a rare bird species, that strips off and eats the scaly covering of the fruit, an action which aids the bird in the digestion of its food and permits the germination of the seed (I.F. Garland pers. comm.).

Rauvolfia caffra (Apocynaceae)

This species is nearly always associated with available groundwater but will stand a little drought (Immelman *et al.* 1973). It is moderately fast-growing, about 0,6 m per annum and can be used as a windbreak (Poynton 1972). It makes a luxuriant shade tree (Immelman *et al.* 1973). The attractive, glossy leaves occur in whorls of 3 to 5.

Rhamnus prinoides (Rhamnaceae)

The dogwood is an attractive species with glossy green, dense foliage and berry-like fruits that turn red and finally black with maturity. The fruits are a major source of food for birds (Spence 1975). It is a proven clipped hedge (Poynton 1972; Stapleton 1940) and is particularly suitable for the cold and moist regions, including the Transvaal highveld. It is moderately fast-growing, about 0,6 m per annum (Poynton 1972).

Rhigozum brevispinosum (Bignoniaceae)

A drought-hardy, deciduous shrub with sparse foliage. It is most attractive and colourful in spring when decorated with bright yellow, bignonia-like flowers. It could be tried as an informal low hedge or partition in gardens in the very dry regions. It should be grown in well drained soil.

Rhigozum obovatum

A hardy, undemanding shrub that produces masses of beautiful bignonia-like flowers in spring and early summer. It does not need pruning, but if necessary, it should be trimmed immediately after flowering, for the flowers appear on the previous season's growth (Eliovson 1965). It should be grown in well-drained soil.

Rhus (Anacardiaceae)

Most of the karrees produce copious quantities of small fruits — an important source of winter food for birds (Spence 1975).

Rhus ciliata

Could make an excellent, sturdy, framework plant for the cold and dry regions. It often grows in large

colonies and tends to form thickets. Mature plants open up underneath as the crowns cast more shade. The branches are not always armed with spines.

Rhus erosa

A hardy, evergreen species with fine foliage. It has sometimes been used to make an attractive hedge (Palgrave 1977; Palmer & Pitman 1972). It is also a valuable soil-binder, its removal often being followed by serious erosion (Palgrave 1977).

Rhus gueinzii

A potential framework plant. It is sturdy, frequently multi-stemmed, with a spreading crown and flexuous, arching branches. Spines may be absent, confined to the main branches or be on all parts of the plant.

Rhus incisa

A very drought-hardy species with rigid and spreading branches. It has been recommended as a windbreak for coastal areas in the Cape (Van der Merwe *et al.* 1978).

Rhus lancea

The karree is a tree that should be exploited to its full potential in the interior of South Africa. There are very few other species — either indigenous or introduced — that combine such favourable characteristics. It is evergreen, attractive and develops immense character with age; it is moderately fast-growing (Poynton 1972), easy to propagate and cultivate, and it is undemanding as to soil; it is exceedingly drought resistant, tolerates a great deal of frost and attains tree size under conditions too harsh for the majority of other tree species. It makes a suitable shade and street tree, windbreak, screen and hedge. Due to its ability to spread under certain conditions, particularly veld mismanagement, it has been declared an invader plant in the Transvaal.

Rhus leptodictya

The mountain karree, like the karree (*Rhus lancea*) should be exploited to its full potential in the interior of South Africa. It closely resembles *R. lancea* but its branches are more drooping and it does not grow in such dry areas. It makes an attractive windbreak, screen, street tree and clipped hedge. It is suitable for planting in the Johannesburg and Pretoria areas where it occurs naturally on the hills surrounding the cities.

Rhus longispina

Could make an outstanding, drought-hardy, security hedge. In parts of its distribution it resembles the 'ideal' framework plant. It is sturdy with a rounded, spreading crown and is exceptionally densely branching right down to ground level (Figure 24A). This round, compact growth form is encouraged by browsing by livestock and should therefore, also be obtained by clipping. The spines are hard and sharp-tipped, particularly in the young, vigorously-growing shoots. It was used by the early colonists as a spiny hedge to keep wild animals out of gardens and kraals (Smith 1966) and is recommended by Palmer & Pitman (1972) as a thick garden hedge.

Rhus montana

A frost-hardy species that occurs naturally in high mountain areas, often along river banks. It has a graceful, drooping habit and should make an excellent garden tree. It has been planted as a hedge in the eastern Transvaal (Palmer & Pitman 1972).

Rhus pyroides

Widely distributed in southern Africa and adapted to a wide range of soil and climatic conditions. It is sturdy, either multi-stemmed or low-branching, with a dense, spreading crown (Figure 24B). The spines are hard and stout (Figure 24C), a spine prick or scratch causing stinging and burning of the skin (Palgrave 1977; Palmer & Pitman 1972). A decorative species for the garden as either a tree or a hedge (Palmer & Pitman 1972). If desired, propagative material can be selected from spineless forms.

Rhus refracta

A potential framework plant. Similar to *Rhus longispina* but generally smaller, less sturdy and less spiny.

Rhus undulata

A frost- and drought-hardy species that has potential as a hedge. It should, however, be used with caution in farming areas since it is capable of rapid spread and its leaves are unpalatable (Palmer & Pitman 1972).

Rinorea angustifolia (Violaceae)

A shade-tolerant, very floriferous species that can form a pretty hedge (Sim 1919).

Rubus (Rosaceae) (Figure 24D)

Potentially useful entanglers for the cold and moist regions. Easily spread by birds; only indigenous species should be used and preferably only in the areas where they occur naturally.

Rubus ludwigii

A thorny, softly woody perennial that could be used as a short filler in the very cold and moist regions. Propagation should be possible from seed or cuttings.

Rubus pinnatus

A potential entangler. The flexuous, widely spreading branches are armed with numerous sharp thorns. Propagation should be possible from seed or cuttings. It can become a weed (e.g. at the Tate Vondo Tea Estate in the north-eastern Transvaal (National Herbarium, Pretoria)).

Rubus rigidus

A potential entangler for the moist regions from an altitude of 2 000 m or more down to sea level. Propagation should be possible from seed or cuttings.

Schotia afra (Fabaceae)

A spreading, usually evergreen shrub or tree that branches close to the ground. The attractive, red flowers are produced in profusion, but are often on the old wood and are somewhat hidden by new leaf growth. It has potential as a low windbreak for hot and dry districts, including coastal areas. It is extremely wind- and drought-resistant and enjoys a hot, frost-free climate.

Schotia brachypetala

A handsome, semi-evergreen tree that drops its

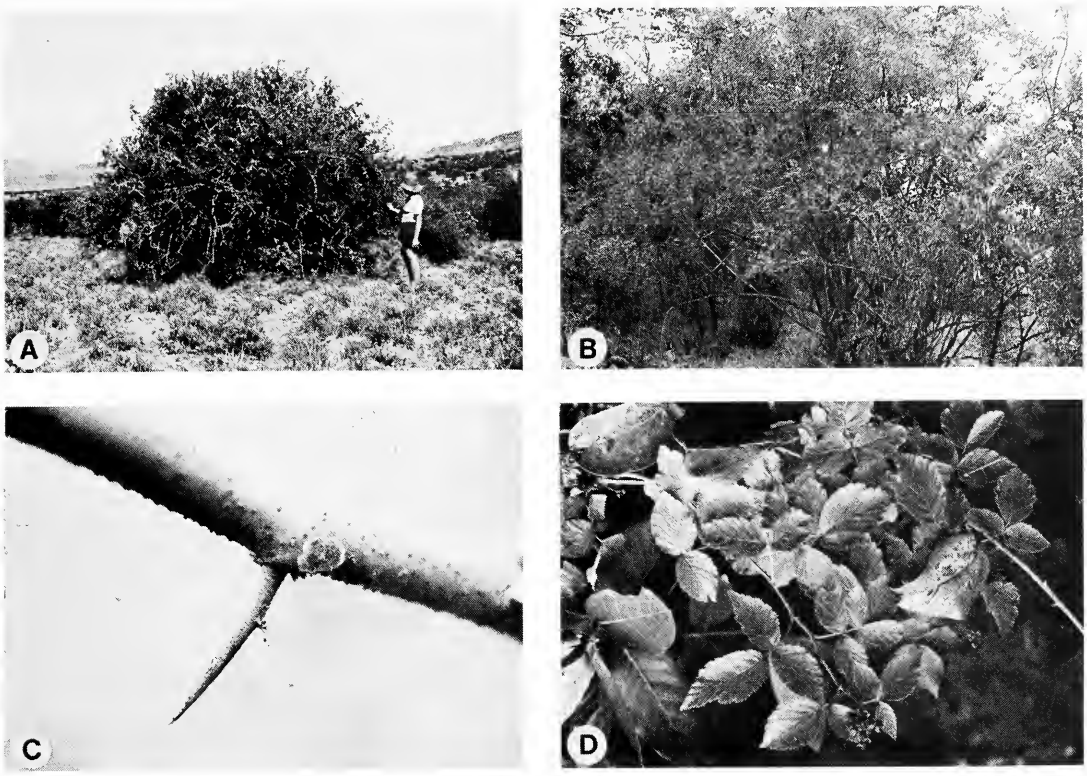


FIGURE 24.—A, *Rhus longispina*. Closely resembles the 'ideal' framework plant. It is sturdy with a rounded, spreading crown and is exceptionally densely branching right down to ground level; B, *Rhus pyroides*. A widespread and very adaptable species. It is sturdy and has a dense, spreading crown; C, *Rhus pyroides*. The spines are hard and stout. Sometimes it is unarmed; D, *Rubus* sp. Potential entanglers for the cold and moist regions.

leaves for a short time before flowering. It has a dense, rounded, spreading crown that bears attractive, red flowers in branched sprays on the old wood during spring or early summer. The flowers produce large quantities of nectar which makes them very attractive to birds and bees. The seeds from the attractive, woody pods can be roasted and eaten (Palmer & Pitman 1972); they are fairly nutritious but have little flavour (National Herbarium, Pretoria). It is an excellent shade and ornamental tree for hot, dry regions. It can also be used as a windbreak (Poynton 1972). It is slow-growing — about 0,3 m per annum or less (Poynton 1972), to moderately fast-growing — 4,6 m in 10 years (Van Wyk, W.C.E. 1971).

Schotia latifolia

An attractive species in foliage and flower. It has been cultivated to a limited extent as a shade and ornamental tree and can be used as a windbreak (Immelman *et al.* 1973). The pale pink flowers are sometimes produced in profusion but flowering tends to be sporadic (M.J. Wells pers. comm.). It is slow-growing, about 0,3 m per annum or less (Immelman *et al.* 1973).

Scolopia flanaganii (Flacourtiaceae)

A potential framework plant for the moderately cold regions. Usually a compact, leafy shrub with slender spines. It is often thicket-forming.

Scolopia mundii

A potential framework plant for the moderately cold regions. A densely leafy, evergreen tree with slender spines; it would require clipping. It has been used as a garden hedge (Smith 1966). There is one report of this very common plant having been the cause of one case of fatal human poisoning in Zululand (Sapeika 1944).

Scolopia zeyheri

A potential framework plant for the moderately cold regions. Clipping should encourage a dense, compact growth. Spines are usually present on the branchlets and coppice shoots, and may form large branched masses on the main trunk. It grows easily from seed and suckers (Palmer & Pitman 1972) and has been used as a garden hedge (Smith 1966).

Scutia myrtina (Rhamnaceae)

On its own, not very robust, but intensely thorny. It could be useful in the consolidation of a barrier, e.g. in which large and sturdy species such as *Rhus longispina* and *Dovyalis caffra* have been used. Clipping should encourage a denser and spinier growth form. It can be used as an entangler in humid, shady conditions. It has been used as a security hedge in India (Howes 1946). The astringent fruit ('droog-my-keel') is popular with country folk. It is known in the eastern Cape as a honey plant (Anderson *et al.* 1973).

Securinega virosa (Euphorbiaceae)

A multi-stemmed, bushy shrub that is often evergreen and can be used as a hedge (National Herbarium; Palmer & Pitman 1972).

Sesbania sesban (Fabaceae)

A fast-growing, short-lived species that usually grows near water, often on a river or streambank. It has been planted for shelter in coffee plantations at Port St Johns (National Herbarium, Pretoria).

Sideroxylon inerme (Sapotaceae)

This species has a rounded, spreading, evergreen crown. It has been used as a street tree in Port Shepstone (National Herbarium, Pretoria), it makes a magnificent shade tree and it can be used as a windbreak (King 1951). A bunch of flowers or a tree laden in flowers, however, may have an overwhelming and unpleasant smell (National Herbarium; Palmer & Pitman 1972).

Smilax kraussiana (Liliaceae)

A potential entangler. A shade-tolerant climber beset with hooked inconspicuous, thorns (Figure 25). It casts little shade.

FIGURE 25.—*Smilax kraussiana*. A potential entangler which tolerates shade. It has vicious thorns and casts little shade.

Smodingium argutum (Anacardiaceae)

It could be used as an ornamental, irritant filler. Apart from its irritant sap, it does not have the physical characteristics of a security barrier plant and its leafy crown in summer might shade out other species. It is fast-growing (Eliovson 1965). The sap can cause an allergic reaction in some people which results in a rash, blistering and swelling accompanied by itching and intense burning pain (Palgrave 1977; Watt & Breyer-Brandwijk 1962). Pollen may also cause intense irritation (Palmer & Pitman 1972). There is one unconfirmed report that the plant is poisonous to stock (National Herbarium, Pretoria). It is probably avoided by browsers. The fruits, each of which is a nut enclosed in a papery wing, are produced in attractive, dense heads.

Strelitzia (Strelitziaceae)

The *Strelitzia* species are ornamental, banana-like plants with large, handsome and unusual flowers that resemble the heads of cranes. Their leaves are large, up to 2 m long, and are usually stripped into ribbons by the wind. The three tree species in southern Africa, *S. alba, S. caudata* and *S. nicolai* and possibly the related wild banana (*Ensete ventricosum*) have potential as ornamental screen plants for the moist, frost-free areas.

Synadenium cupulare (Euphorbiaceae)

A potential irritant filler. It should be used in combination with thorny framework species that can puncture the leaves and stems to release the latex. The latex is reputed to be poisonous and to cause intense skin irritation and blistering, and even blindness (Watt & Breyer-Brandwijk 1962). However, handled with care it is quite harmless (Palmer & Pitman 1972; White *et al.* 1941). It has, at least at one time, been cultivated and been much sought after for its interesting leaves and freely-blooming habit (White *et al.* 1941). The leaves and young branches are succulent, but the latter become woody with age. It is avoided by browsers (National Herbarium). It is used as a hedge plant in Venda (National Herbarium, Pretoria) and is planted on graves to keep animals away (Palgrave 1977).

Syzygium cordatum (Myrtaceae)

An evergreen tree with a dense, rounded crown. It makes a pleasing shade tree and can be used as a windbreak (Immelman *et al.* 1973). Moderately fast-growing (Poynton 1972).

Tamarix usneoides (Tamaricaceae)

This species grows in the very arid parts of southern Africa, including the Namib Desert, but is dependent on an ample supply of groundwater. It tolerates highly saline conditions. It could be useful as a low shelterbelt or informal hedge.

Tarchonanthus camphoratus (Asteraceae)

One of the most widespread and adaptable woody species in southern Africa. It is hardy to extreme heat, drought, cold, wind and salt spray. It makes an attractive garden tree and could be useful as an informal hedge and low shelterbelt. It is a valuable species for coastal areas for it flourishes where most other species succumb in the direct path of salt sea-spray (Palmer & Pitman 1972). The whole plant — the wood, leaves and flowering heads — have a strong, aromatic, camphor-like smell on which the common name, camphor bush, is based. It is a declared invader plant in the Cape and Natal.

Tecomaria capensis (Bignoniaceae)

A very ornamental species and widely cultivated in South Africa as a trimmed hedge, as an informal hedge supported by a wall or fence and as a climber. It is evergreen except where the winters are very cold. It will stand some frost and is hardy to intense heat and aridity. It is fast-growing even in poor soil (Van der Spuy 1957). Its tubular, nectar-rich flowers are most attractive to sunbirds.

Terminalia prunioides (Combretaceae)

It could make a very strong and ornamental framework. It is usually multi-stemmed with a densely branching, spreading crown and branches that arch downwards (Figure 26). The branchlets are spine-tipped but ineffective. It competes strongly with other perennials and is

easily propagated from seed but grows slowly (Van Wyk, W.C.E. 1974). It is very attractive in flower and fruit. The flowers, however, have a heavy, sickly sweet scent that is particularly noticeable in the evening. The fruits remain on the tree for a long time. A road-island planting of this species, with its brilliant red fruits, and *Gardenia volkensii* with its large, white, showy flowers could provide an attractive colour scheme as well as an effective screen. It often grows in the poorest soils, such as brackish flats near rivers, or with underlying limestone, or dry, stony areas with shallow soil (National Herbarium, Pretoria; Van Wyk, P. 1974). It is suitable for the arid, frost-free areas.

FIGURE 26.—*Terminalia prunioides*. A very sturdy shrub with a densely branching, spreading crown and branches that arch downwards.

Trichilia emetica (Meliaceae)

The Natal mahogany is a luxuriant, evergreen tree with a short, erect trunk and a spreading, rounded and symmetrical crown that casts deep shade. The fruits are striking, greenish-yellow capsules that split open to expose black seeds, each of which is enveloped in a shiny bright orange to scarlet aril or outer covering. It is moderately fast-growing, about 0,6 m per annum (Poynton 1972) to fast-growing. A tree in a Pretoria garden grew 6 m in 9 years (Van Wyk, W.C.E. 1972). It makes a superb shade and ornamental tree and a moderately good windbreak (Immelman *et al.* 1973). The specific name of this species refers to its use as an emetic and purgative medicine. The leaf, bark and fruit cause severe gastro-intestinal irritation (Steyn 1934) and Watt (1950) states that the ingestion of a sufficient amount of the fruit and an excessive dosage of the purgative medicine may well result in poisonous effects in humans.

Turraea obtusifolia (Meliaceae)

This is one of the most attractive of all indigenous shrubs. It has a neat, rounded shape, sometimes branching just above ground level. It bears masses of sweetly-scented, white, gardenia-like flowers and the fruits are equally attractive, bursting open to reveal brilliant crimson-coloured seeds. It is recommended as an informal hedge or partition in a garden (Eliovson 1965). Like *Trichilia emetica* this species has also been used as an emetic and strong purgative (Watt & Breyer-Brandwijk 1962) and is regarded as being poisonous (Bryant 1909).

Umtiza listerana (Fabaceae)

It could make a sturdy, tough and very spiny framework plant for the hot and moist regions. The small flowers are produced in abundance, sometimes twice in one season.

Urtica lobulata (Urticaceae)

A potential irritant, short filler. It prefers shade and could be most effective in deterring intruders from crawling beneath the barrier where there are gaps. Irritant hairs located on the leaves and stem have a vicious sting which may last for several hours and may cause blistering. It is probably avoided by browsers.

Vepris undulata (= *Vepris lanceolata*) (Rutaceae)

A slow-growing, good timber tree that can be used as a windbreak (Poynton 1972).

Virgilia oroboides (Fabaceae)

This is one of South Africa's most beautiful flowering trees and one of the most delectably perfumed of all trees. It is very fast-growing, about one metre or more per annum (Poynton 1972), reaching full size in four to five years (Palgrave 1977), but it is short-lived. It may have to be replaced after about 15 to 18 years (Eliovson 1965). It has a low-branching habit and makes a moderately good windbreak (Poynton 1972). Its roots, however, are very shallow and spreading and it should not be exposed to strong winds (Eliovson 1965).

Widdringtonia cedarbergensis (Cupressaceae)

A picturesque, coniferous tree that has an erect, straight stem and cone-shaped crown when grown in dense stands, but in the open it forms a short, gnarled trunk and a spreading, rounded head (Immelman *et al.* 1973). It is sometimes grown for ornament in parks and gardens and can be used as a windbreak and a trimmed hedge (Immelman *et al.* 1973). It is slow-growing, about 0,3 m per annum or less (Poynton 1972).

Widdringtonia nodiflora (= *W. cupressoides*)

This species has a compact, symmetrical, cone-shaped crown. It is sometimes grown for ornament in parks and gardens and can be used as a trimmed hedge (Immelman *et al.* 1973). It is slow-growing, about 0,3 m per annum or less (Poynton 1972). It regenerates itself from coppice shoots after fire (National Herbarium, Pretoria).

Widdringtonia schwarzii

Under favourable conditions this species produces an erect, fairly straight trunk and a more or less columnar to cone-shaped crown. It is sometimes grown for ornament in parks and gardens and can be used as a windbreak and trimmed hedge (Immelman *et al.* 1973). It is slow-growing, about 0,3 m per annum or less (Poynton 1972).

Ximenia americana (Olacaceae)

Could be used as a short filler on the edge of a barrier where it will recieve enough sunlight. Usually a multi-stemmed, densely branching and very spiny shrub. The branches are flexible and the shrub lacks rigidity and strength. It has been recommended as a hedge plant (Howes 1946). It is moderately fast-growing (National Herbarium, Pretoria). The fruit is fleshy, rather sour, but refreshing. It has been used to make beer (Palgrave 1977).

Ziziphus mucronata subsp. *mucronata* (Rhamnaceae)

One of the most widespread and adaptable woody species in southern Africa, growing on all types of soil and resistant to heat, drought and cold. It is sturdy, usually very thorny — the thorns occur in pairs of one straight and one hooked thorn — and has long, flexible, whippy branches. It usually opens up underneath and becomes very shady. It does not stand trimming well (Howes 1946). It is very easily raised from seed and cuttings (Cunliff 1959; Palmer & Pitman 1972; Von Breitenbach 1965) and grows moderately fast (Cunliff 1959). It has been used as a hedge in southern Africa (Howes 1946). When well established, it forms a dense, impenetrable barrier (National Herbarium, Pretoria). The dead branches have also been used to make kraals to protect stock from wild animals. The fruits are eaten by all the tribal peoples of Africa, and a coffee substitute is made from the roasted seeds (Palmer & Pitman 1972). It produces a dark honey of good flavour (Anderson *et al.* 1973).

Ziziphus zeyheriana

A low-growing, very thorny plant that can be used on the periphery of a barrier where it will receive enough sunlight. It is suitable for the cold and dry regions.

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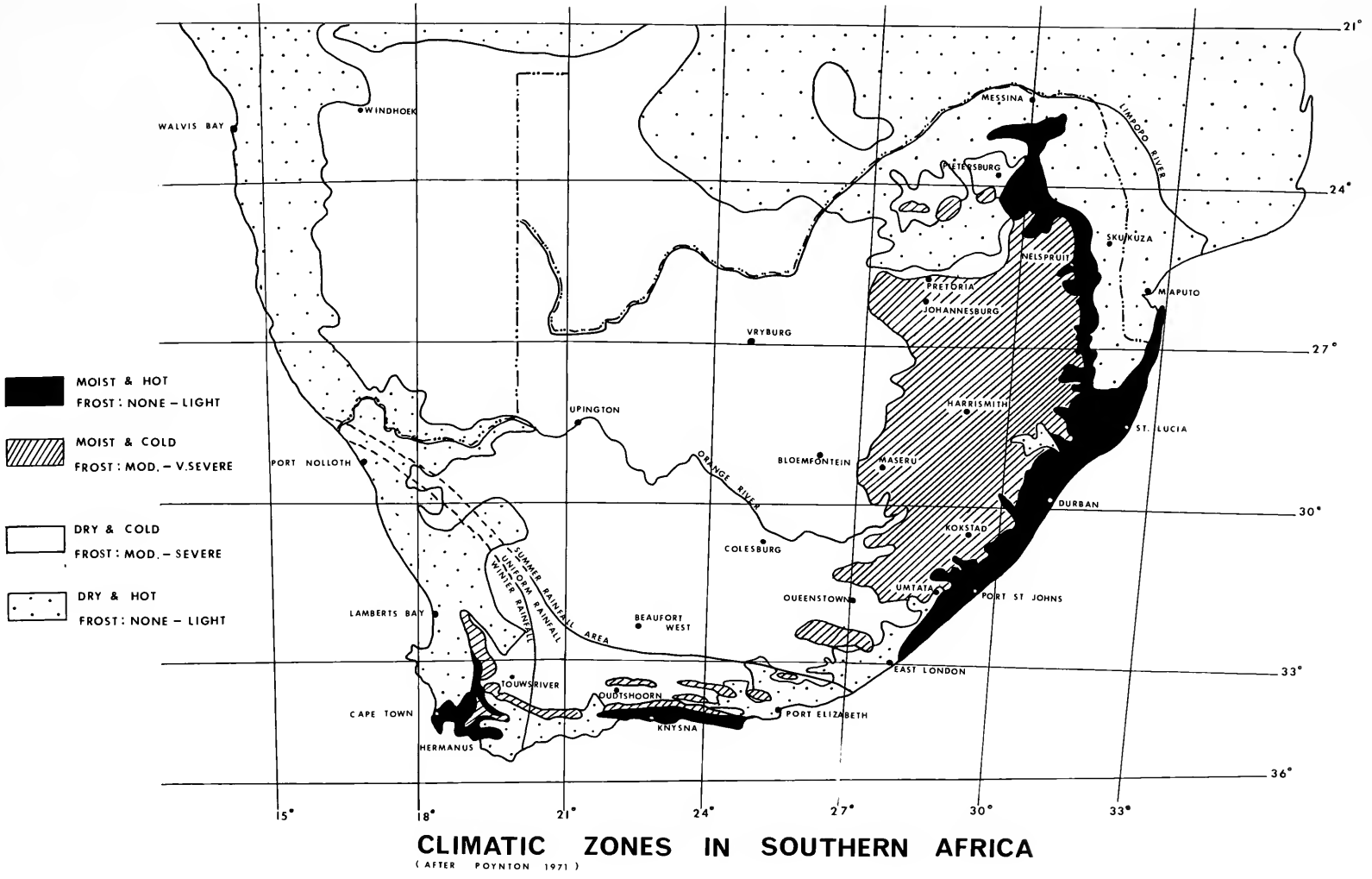

FIGURE 27.—Climatic zones in southern Africa.

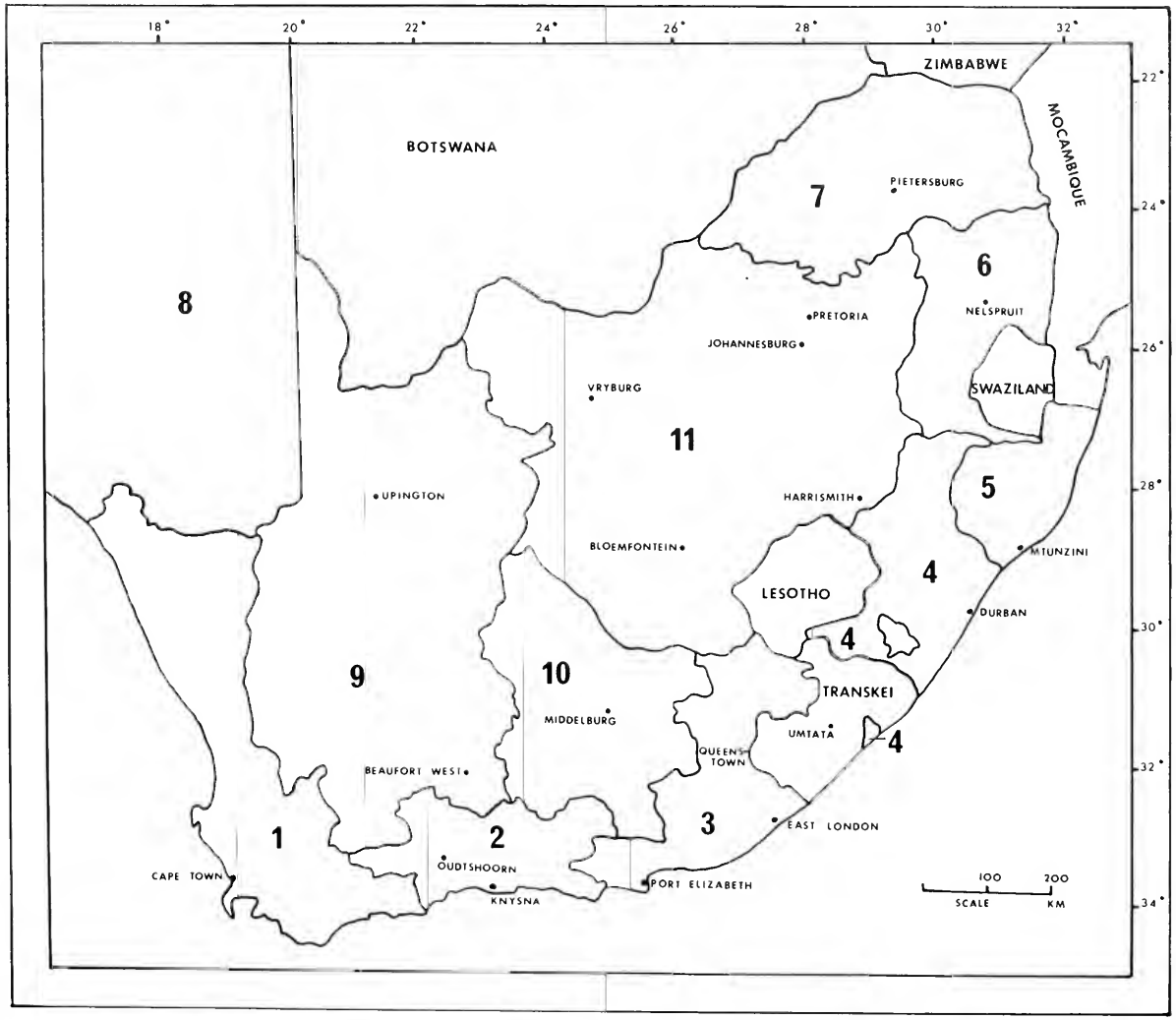

FIGURE 28.—Geographic regions of southern Africa: 1, winter rainfall region; 2, whole-year rainfall region ; 3, eastern Cape; 4, Natal; 5, Zululand; 6, eastern Transvaal; 7, northern Transvaal; 8, South West Africa/Namibia; 9, arid region; 10, Karoo; 11, the Highveld and adjoining districts of the Transvaal, Orange Free State and Cape Province.

TABLES OF INDIGENOUS AND ALIEN SPECIES

TABLE 1.—Recommended indigenous security hedge plants : barrier category; climatic and geographic regions of occurrence

Species name: Botanical	Species name: Common	Barrier category (see Fig. 6): Framework	Entangler	Short filler	Tall filler	Irritant	Climatic zone† (see Fig. 27): Hot and moist	Hot and dry	Cold and moist	Cold and dry	Hardiness to drought and frost#: Frost hardy	Moderately frost hardy	Drought hardy	Moderately drought hardy	Geographic region (see Fig. 28): 1 Winter rainfall	2 Whole-year rainfall	3 Eastern Cape	4 Natal	5 Zululand	6 Eastern Transvaal	7 Northern Transvaal	8 South West Africa	9 Arid region	10 Karoo	11 Highveld	Cultivated in Botanical Garden, Pretoria	Botswana	Zimbabwe	Mozambique	Swaziland	Transkei	Lesotho
Acacia																																
ataxacantha	Flame Thorn	x					x	x	x				x					x	x	x	x	x				x	x	x	x	x	x	
brevispica	Prickly Thorn	x					x	x	x									x	x										x	x	x	
davyi	Corky Thorn	x					x		*		x							x	x	x	x					x				x		
erubescens	Blue Thorn	x					x	x					x							x	x	x				x	x	x	x			
exuvialis	Flaky Thorn	x						x	*	*		x	x							x	x	x				x		x	x			
fleckii	Plate Thorn	x						x	*			x	x								x	x					x	x				
grandicornuta	Horned Thorn	x						x					x						x	x	x					x	x	x	x	x		
hebeclada subsp. *hebeclada*	Candle Thorn			x					x	x		x	x								x	x	x		x	x	x	x				
karroo	Sweet Thorn	x					x	x	x	x		x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
kraussiana	Coast Climbing Thorn	x						x										x	x										x			
luederitzii var. *retinens*	Belly Thorn	x						x					x						x	x	x					x	x		x	x		
mellifera subsp. *detinens*	Black Thorn	x						x		x	x		x								x	x	x		x	x	x	x				
nigrescens	Knob Thorn				x			x	*				x						x	x	x	x				x	x	x	x	x		
schweinfurthii	River Climbing Thorn	x					x	•										x	x	x	x					x	x	x	x	x		
senegal var. *leiorhachis*	Slender Three-hook Thorn				x			x					x							x	x					x	x	x	x			
senegal var. *rostrata*	Three-hook Thorn	x					x	x					x						x	x	x	x					x	x	x	x		
tortilis subsp. *heteracantha*	Umbrella Thorn	x			x		x	x	x	x		x	x					x	x	x	x	x				x	x	x	x	x		
Aloe																																
arborescens	Krantz Aloe	x					x	x	x						x	x	x	x	x	x	x					x		x	x	x	x	
Azima																																
tetracantha	Needle Bush	x		x			x	x					x		x	x	x	x	x	x	x	x				x		x	x	x	x	
Balanites																																
maughamii	Green Thorn				x		x	x						x					x	x	x					x	x	x	x	x		
Caesalpinia																																
bonduc	Ash-coloured Nicker (Smith 1966)	x					x											x	x										x		x	
Capparis																																
fascicularis			x				x	x						x			x	x	x	x	x									x	x	
sepiaria	Wild Caper Bush	x	x				x	x					x			x	x	x	x		x					x		x	x		x	

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TABLE 1.—Recommended indigenous security hedge plants : barrier category; climatic and geographic regions of occurrence (continued)

Species name		Barrier category (see Fig. 6)					Climatic zone † (see Fig. 27)				Hardiness to drought and frost #				Geographic region (see Fig. 28)																		
Botanical	Common	Framework	Entangler	Short filler	Tall filler	Irritant	Hot and moist	Hot and dry	Cold and moist	Cold and dry	Frost hardy	Moderately frost hardy	Drought hardy	Moderately drought hardy	1 Winter rainfall	2 Whole-year rainfall	3 Eastern Cape	4 Natal	5 Zululand	6 Eastern Transvaal	7 Northern Transvaal	8 South West Africa	9 Arid region	10 Karoo	11 Highveld	Cultivated in Botanical Garden, Pretoria	Botswana	Zimbabwe	Mozambique	Swaziland	Transkei	Lesotho
Capparis																																
tomentosa	Woolly Caper Bush	x	x				x	x					x					x	x	x	x					x	x	x	x	x	x	
Carissa																																
bispinosa var. *bispinosa*	Num-num (Palgrave 1977)			x			x	x	x	x		x	x		x	x	x	x	x	x	x	x			x	x	x	x	x	x	x	
haematocarpa	Karroo Num-num			x				x					x		x	x	x					x		x								
macrocarpa	Large Num-num	x					x								*	*	x	x	x	*	*					x					x	
tetramera				x			x	x					x						x												x	
Cassinopsis																																
ilicifolia	Lemon Thorn	x					x		x			x				x	x	x	x	x					x	x		x		x	x	x
Catunaregam																																
spinosa	Thorny Bone-apple	x					x	x						x					x	x	x					x	x	x	x	x		
Chaetachme																																
aristata	Thorny Elm	x					x	•									x	x	x	x	x					x		x	x	x	x	
Commiphora																																
africana	Hairy Corkwood	x		x				x					x						x	x	x	x				x	x	x	x	x		
glandulosa	Tall Common Corkwood	x						x					x						x	x	x	x				x	x	x	x	x		
pyracanthoides	Common Corkwood	x		x		x		x		x			x						x	x	x	x			x	x	x	x	x	x		
schimperi	Glossy-leaved Corkwood	x						x					x						x	x	x				x	x	x	x	x			
woodii	Forest Corkwood	x					x							x			x	x	x												x	
Dalbergia																																
armata	Thorny Rope		x				x	•									x	x	x	x	x					x			x	x	x	
Dichrostachys																																
cinerea subsp. *africana*	Sickle Bush	x					x	x		x		x	x					x	x	x	x	x			x	x	x	x	x	x		
Dovyalis																																
caffra	Kei-apple	x					x	x	*	*		x	x		*	*	*	x	x	x	x	*	*	*		x				x	x	
rhamnoides	Common Sourberry	x					x	x								x	x	x	x	x										x	x	
zeyheri	Wild Apricot	x					x	x	x			x		x			x	x	x	x	x				x	x		x		x	x	
Ehretia																																
rigida	Puzzle Bush	x					x	x	x	x	x		x			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

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TABLE 1.—Recommended indigenous security hedge plants : barrier category; climatic and geographic regions of occurrence (continued)

Species name		Barrier category (see Fig. 6)					Climatic zone † (see Fig. 27)				Hardiness to drought and frost #				Geographic region (see Fig. 28)																						
Botanical	Common	Framework	Entangler	Short filler	Tall filler	Irritant	Hot and moist	Hot and dry	Cold and moist	Cold and dry	Frost hardy	Moderately frost hardy	Drought hardy	Moderately drought hardy	Winter rainfall	Whole-year rainfall	Eastern Cape	Natal	Zululand	Eastern Transvaal	Northern Transvaal	South West Africa	Arid region	Karoo	Highveld	Cultivated in Botanical Garden, Pretoria	Botswana	Zimbabwe	Mozambique	Swaziland	Transkei	Lesotho				
															1	2	3	4	5	6	7	8	9	10	11												
Entada																																				
spicata	Spiny Splinter Bean (Palgrave 1977)	x					x	•							*		x	x	x	x	x										x	x				
Euphorbia																																				
avasmontana	Bushman's Poison (Smith 1966)					x		x		x		x	x		*							x	x													
cooperi	Transvaal Candelabra Tree	x		x		x	x	x					x						x	x	x				x	x			x	x	x				
grandialata		x				x		x					x							x						x									
grandicornis	Big-horned Euphorbia (White *et al.* 1941)	x				x		x					x					*	x							x				x					
ingens	Common Tree Euphorbia	x		x		x	x	x					x		*			x	x	x	x				x	x	x	x	x	x					
ledienii	Sour Noors (White *et al.* 1941)					x		x					x				x																		
pseudocactus						x		x					x					x								x									
tirucalli	Rubber Euphorbia	x				x	x	x					x					x	x	x	x					x			x	x	x	x			
virosa	Venomous Euphorbia (White *et al.* 1941)	x				x		x					x		x							x													
Flacourtia																																				
indica	Governor's Plum	x					x	•										*		x	x				x	x	x	x							
Gardenia																																				
amoena	Thorny Gardenia	x					x	•									x	x	x	x	x					x				x	x	x			
volkensii	Transvaal Gardenia	x					x	x					x					x	x	x	x	x				x	x	x	x	x	x				
Lebeckia																																				
macrantha					x					x		x	x									x	x	x	x											
Lycium																																				
afrum	Kraal Honey-thorn	x		x				x		x	x		x		x	x	x																		
ferocissimum	African Boxthorn (National Herbarium)	x		x				x		x	x		x		x	x	x						x		x									x	
hirsutum		x		x						x	x		x										x		x										
oxycarpum	Honey-thorn	x			x			x		x	x		x		x	x	x						x	x		x									
prunus-spinosa		x		x				x		x	x		x			x						x	x	x	x										
Maclura																																				
africana	Cardiogyne (Palgrave 1977)	x					x	•												x	x					x			x	x					
Maytenus																																				
capitata		x		x				x		x			x		x	x	x																		

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TABLE 1.—Recommended indigenous security hedge plants: barrier category; climatic and geographic regions of occurrence (continued)

Species name		Barrier category (see Fig. 6)					Climatic zone† (see Fig. 27)				Hardiness to drought and frost #				Geographic region (see Fig. 28)																	
Botanical	Common	Framework	Entangler	Short filler	Tall filler	Irritant	Hot and moist	Hot and dry	Cold and moist	Cold and dry	Frost hardy	Moderately frost hardy	Drought hardy	Moderately drought hardy	1 Winter rainfall	2 Whole-year rainfall	3 Eastern Cape	4 Natal	5 Zululand	6 Eastern Transvaal	7 Northern Transvaal	8 South West Africa	9 Arid region	10 Karoo	11 Highveld	Cultivated in Botanical Garden, Pretoria	Botswana	Zimbabwe	Mozambique	Swaziland	Transkei	Lesotho
Maytenus																																
heterophylla	Common Spike-thorn	x					x	x	x	x	x		x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
polyacantha	Kraal Spike-thorn	x		x				x	x	x		x	x			x	x			x	x			x	x	x						
senegalensis	Red Spike-thorn	x		x			x	x						x	*		*	x	x	x	x	x					x	x	x	x		
Mucuna																																
coriacea subsp. *irritans*	Hell-fire Beans (Smith 1966)					x	x	•												x	x									x		
Nylandtia																																
spinosa				x			x	x		x	x		x		x	x	x					x				x						
Obetia																																
tenax	Mountain Nettle					x	x	x						x			x	x	x	x	x				x	x	x	x	x	x	x	
Oncoba																																
spinosa	Snuff-box Tree	x					x	•							*				x	x	x					x	x	x	x	x		
Parkinsonia																																
africana	Wild Green-hair Tree				x			x		x		x	x		x							x	x									
Phaeoptilum																																
spinosum		x		x				x		x		x	x		x						x	x	x	x								
Phoenix																																
reclinata	Wild Date Palm	x					x	•									x	x	x	x	x	x				x	x	x	x	x	x	
Pisonia																																
aculeata	Pisonia		x				x											x	x										x			
Protasparagus																																
aethiopicus			x				x	x	x	x		x	x		x	x	x	x						x							x	
africanus			x				x	x	x						x	x	x	x				x					x					
angusticladus			x				x	x	x			x		x						x	x				x					x		
capensis			x	x			x	x	x	x		x	x		x	x	x					x	x	x								
krebsianus			x					x	x			x		x			x	x		x	x				x	x						
laricinus			x				x	x	x	x	x		x				x	x		x	x	x	x		x	x	x				x	x
racemosus			x				x	x										x	x	x	x		x	x			x			x	x	

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TABLE 1.—Recommended indigenous security hedge plants : barrier category; climatic and geographic regions of occurrence (continued)

Species name		Barrier category (see Fig. 6)					Climatic zone † (see Fig. 27)				Hardiness to drought and frost #				Geographic region (see Fig. 28)																	
Botanical	Common	Framework	Entangler	Short filler	Tall filler	Irritant	Hot and moist	Hot and dry	Cold and moist	Cold and dry	Frost hardy	Moderately frost hardy	Drought hardy	Moderately drought hardy	Winter rainfall 1	Whole-year rainfall 2	Eastern Cape 3	Natal 4	Zululand 5	Eastern Transvaal 6	Northern Transvaal 7	South West Africa 8	Arid region 9	Karoo 10	Highveld 11	Cultivated in Botanical Garden, Pretoria	Botswana	Zimbabwe	Mozambique	Swaziland	Transkei	Lesotho
Pterolobium																																
stellatum	Madagascar Thorn	x					x	•												x	x					x						
Putterlickia																																
pyracantha	Bastard Spike-thorn	x		x			x	x		x		x	x		x	x	x	x	x	x			x			x						
verrucosa	Warted Bastard Spike-thorn	x		x			x	x									x	x	x	x						x			x			
Rhus																																
ciliata	Sour Karree	x								x		x	x									x	x	x	x							
gueinzii	Thorny Karree	x					x	x						x			x	x	x	x	x					x		x	x	x	x	
longispina	Thorny Currant	x					x	x					x			x	x							x								
pyroides	Common Wild Currant	x					x	x	x	x	x		x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
refracta		x					x	x					x			x	x														x	
Rubus																																
ludwigii	Black Bramble (National Herbarium)			x					x		x						x	x		x					x						x	x
pinnatus	Orange-berried Bramble (National Herbarium)		x				x		x		x				x	x	x	x	x	x	x				x					x	x	x
rigidus	Wild Blackberry (National Herbarium)		x				x	•	x		x				x	x	x	x	x	x	x			x	x		x			x	x	x
Scolopia																																
flanaganii	Small-leaved Thorn Pear	x					x		x			x					x	x	x												x	x
mundii	Red Pear	x					x		x			x			x	x	x	x	x	x										x	x	x
zeyheri	Thorn Pear	x					x	x	x			x				x	x	x	x	x	x				x	x	x	x	x	x	x	x
Scutia																																
myrtina	Cat-thorn	x	x	x			x	x	x			x		x	x	x	x	x	x	x	x				x	x		x	x	x	x	x
Smilax																																
kraussiana			x				x								*			x	x	x	x					x				x		
Smodingium																																
argutum	Pain Bush					x	x	x	x			x		x	*		x	x	x	x						x				x	x	x
Synadenium																																
cupulare	Dead-man's Tree					x	x	x						x				x	x	x	x					x			x	x		
Terminalia																																
prunioides	Lowveld Cluster-leaf	x						x					x							x	x	x				x	x	x	x			

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Botanical	Common	Framework	Entangler	Short filler	Tall filler	Irritant	Hot and moist	Hot and dry	Cold and moist	Cold and dry	Frost hardy	Moderately frost hardy	Drought hardy	Moderately drought hardy	1 Winter rainfall	2 Whole-year rainfall	3 Eastern Cape	4 Natal	5 Zululand	6 Eastern Transvaal	7 Northern Transvaal	8 South West Africa	9 Arid region	10 Karoo	11 Highveld	Cultivated in Botanical Garden, Pretoria	Botswana	Zimbabwe	Mozambique	Swaziland	Transkei	Lesotho
Umtiza																																
listerana	Umtiza	x					x										x									x					x	
Urtica																																
lobulata						x	x		x						x	x	x	x							x							x
Ximenia																																
americana	Small Sourplum			x			x	x					x						x	x	x	x					x	x	x	x		
Ziziphus																																
mucronata subsp. *mucronata*	Buffalo-thorn	x					x	x	x	x	x		x				x	x	x	x	x	x	x		x	x	x	x	x	x	x	
zeyheriana				x			x	x	x	x	x		x						x	x	x				x		x					

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TABLE 2.—Recommended indigenous security hedge plants : species descriptions and miscellaneous information

Species name	Description																		Miscellaneous													
	Woodiness		Life form				Height		Foliage					Flowers and fruits	Armature (thorns)				Propagation			Substrate, soil and moisture #										
																	Average length (cm)															
	Woody	Succulent	Tree	Shrub	Scandent shrub	Climber	Average (m)	Maximum (m)	Dark green	Light green	Grey-green	Evergreen	Deciduous	Colour of (Fl)owers — scented (S) and (Fr)uits — edible (E)	Always armed	Sometimes armed	Hooked	Straight	From seed	From cuttings	From truncheons	Stony	Beach dune	Desert dune	Other deep sand	Clay	Brack	Calcrete	Laterite	Poorly-drained	Eroded	Other †
Acacia																																
ataxacantha	x		x	**x**	**x**	**x**	3–5	15	x			x	x	**Fls cream**, S; **Frs red**	x		<1		x			x		x		x				x	x	1
brevispica	x		x	**x**	**x**	x	2–3	8		x		**x**	x	Fls cream, S	x		<1		x			x				x					x	
davyi	x		x	**x**			2–3	12		x		x		Fls yellow	x			1–3	x			x				x	x		x	x		
erubescens	x		x	x			3–5	9	x	x			x	Fls cream, S	x		<1		x			x			**x**	x	x	x				
exuvialis	x		x	x			2–3	5		x			x	Fls yellow, S	x			1–3	x			x				x					x	
fleckii	x		x	**x**			2–3	10		x			x	Fls cream, S	x		<1		x			x		x	**x**			x		x		
grandicornuta	x		x				3–6	15	x				x	Fls cream, S	x			3–6	x				x		x	x	x	x			x	
hebeclada subsp. *hebeclada*	x		x	**x**			2–3	8		x			x	Fls cream, S; Frs grey	x		1–3	1–3	x			x		x		x	x	x		x		1, 3
karroo	x		x	x			5–7	22	x	x		x	**x**	**Fls yellow,** S	x			4	x			x	x		x	x	x	x		x	x	1, 5
kraussiana	x		x		**x**	**x**	3–5	15	x			x		Fls cream	x		<1		x			x	x			x				x		
luederitzii var. *retinens*	x		x	x			3–5	11		x			x	Fls cream, S	x		<1		x			x				x	x					8?
mellifera subsp. *detinens*	x		x	x			3–4	9		x			x	**Fls cream, S**	x		<1		x			x		x	**x**	x	x	x			x	1
nigrescens	x		x				8–10	23		x			x	**Fls cream,** S	x		<1		x			x			**x**	x		x		x		1
schweinfurthii	x		x	x	**x**	**x**	3–5	15	x			x		Fls cream, S	x		<1		x			x							x	x	x	8?
senegal var. *leiorhachis*	x		x				5–8	17		x			x	Fls cream, S	x		<1		x			x						x				8?
senegal var. *rostrata*	x		x	**x**			2–3	9		x			x	Fls cream, S	x		<1		x			x			x	x	x	x				1
tortilis subsp. *heteracantha*	x		**x**	x			5–8	20	x			x		Fls cream, S	x		<1	3–6	x			x			x	x	x	x		x	x	1, 3?
Aloe																																
arborescens		x	x	**x**			2–3	4			x	x		**Fls red**					x	x		x										
Azima																																
tetracantha	x		x	**x**	**x**	x	1–3	8		x		x			x			2	x			x	x			x	x					1,4,5,7
Balanites																																
maughamii	x		x				8–12	20	x				x		x			3–6	x			x	x			x				**x**		3
Caesalpinia																																
bonduc	x				x	x	2–6	*		x		x		Fls yellow; Frs brown	x		<1	<1					x									5
Capparis																																
fascicularis	x			x	**x**	**x**	*	10		x		x		Fls white, S	x		<1					x	x									1, 5?
sepiaria	x		x	x	**x**	**x**	2–3	6	x			x		Fls white	x		<1		x	x		x	x			x		x			x	1,2,5,8?
tomentosa	x		x	x	**x**	**x**	3–5	11	x	x		x		**Fls white**, S; Frs orange	x		<1					x				x						1, 3, 8?

† 1, ability to coppice; 2, responds to trimming; 3, poisonous; 4, irritant; 5, resists sea winds; 6, shade tolerant; 7, partially shade tolerant; 8, browse-resistant. * Insufficient data. # Only tolerance of 'adverse' and not optimal conditions are included. A species tolerance of any of these 'adverse' conditions may only be marginal but it has been noted. Bold type used under the heading Life form = most frequently encountered form; Height, Foliage = the usual condition; other columns = well-developed characteristics.

TABLE 2.—Recommended indigenous security hedge plants : species descriptions and miscellaneous information (continued)

Species name	Description																					Miscellaneous													
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	Woody	Succulent	Tree	Shrub	Scandent shrub	Climber	Average (m)	Maximum (m)	Dark green	Light green	Grey-green	Evergreen	Deciduous	Colour of (Fl)owers — scented (S) and (Fr)uits — edible (E)	Always armed	Sometimes armed	Average length (cm) Hooked	Average length (cm) Straight	From seed	From cuttings	From truncheons	Stony	Beach dune	Desert dune	Other deep sand	Clay	Brack	Calcrete	Laterite	Poorly-drained	Eroded	
Carissa																																
bispinosa var. *bispinosa*	x			x			**1–2**	5	x			x		Fls S, Frs E	x			2–5	x	x		x	x			x	x	x			x	2, 5, 7
haematocarpa	x		x	**x**			**1–2**	4	x			x		Fls white, S; Frs E	x			2–5	?	?		x										
macrocarpa	x		x	**x**			**2–4**	8	x			x		**Fls white, S**; Frs red, **E**	x			2–5	x	x			x									1, 2, 5, 7
tetramera	x			x			**1–2**	3	x			x		Fls S; Frs E	x			2–5	?	?		x	x								x	5, 7
Cassinopsis																																
ilicifolia	x		x	**x**	**x**	x	**2–4**	10	x			x		Fls S; Frs orange	x			1–3	x			x				x				x		7
Catunaregam																																
spinosa	x		x	**x**			**3–5**	7	x			x	x	Fls white, S	x			1–3	x	x		x	x							x	x	1
Chaetachme																																
aristata	x		x	x	x	x	**3–6**	20	x			x			x			1–3	x			x	x									1, 6
Commiphora																																
africana	x	x	x	**x**			**1–2**	7	x				x		x			1–3	x		x	x		x	x	x		x				3?, 8?
glandulosa	x	x	**x**	x			**3–4**	9	x	x			x		x			1–3	x	x	x	x		x		x		x		x		3
pyracanthoides	x	x	x	**x**			**1–2**	7	x				x		x			1–3	x		x	x			x		x	x			x	3?, 4, 8?
schimperi	x	x	**x**	x			**3–5**	8	x	x			x		x			1–3	x	x	x	x										
woodii	x	x	x				**4–6**	20	x	x		x	x						x		x	x									x	7
Dalbergia																																
armata	x		x	x	x	**x**	**2–15**	30		x		x	x	**Fls cream**, S	x			3–6	x		x	x	x						x		x	5
Dichrostachys																																
cinerea subsp. *africana*	x		x	x			**2–4**	8	x				x	Fls yellow/cream and pink/purple	x			1–3	x			x	x			x	x	x	x	x	x	7
Dovyalis																																
caffra	x		x	**x**			**3–5**	8	x	x		x		Frs yellow, **E**	x			3–6	x			x			x							1, 2, 5, 7
rhamnoides	x		x	**x**			**1–3**	12	x	x		x		Frs red, **E**	x			2–5	x	x		x	x									1, 5, 7
zeyheri	x		x	x			**3–5**	18	x	x		x		Frs orange, **E**	x			1–3	x			x			x	x					x	1, 7
Ehretia																																
rigida	x		x	**x**			**1–3**	12		x		x		**Fls blue/lavender/ white, S**					x	x		x	x			x	x	x		x		1, 7

† 1, ability to coppice; 2, responds to trimming; 3, poisonous; 4, irritant; 5, resists sea winds; 6, shade tolerant; 7, partially shade tolerant; 8, browse-resistant. * Insufficient data. # Only tolerance of 'adverse' and not optimal conditions are included. A species tolerance of any of these 'adverse' conditions may only be marginal but it has been noted. Bold type used under the heading Life form = most frequently encountered form; Height, Foliage = the usual condition; other columns = well-developed characteristics.

TABLE 2.—Recommended indigenous security hedge plants : species descriptions and miscellaneous information (continued)

Species name	Description																		Miscellaneous													
	Woodiness		Life form				Height		Foliage					Flowers and fruits	Armature (thorns)				Propagation			Substrate, soil and moisture #										
																	Average length (cm)															
	Woody	Succulent	Tree	Shrub	Scandent shrub	Climber	Average (m)	Maximum (m)	Dark green	Light green	Grey-green	Evergreen	Deciduous	Colour of (Fl)owers — scented (S) and (Fr)uits — edible (E)	Always armed	Sometimes armed	Hooked	Straight	From seed	From cuttings	From truncheons	Stony	Beach dune	Desert dune	Other deep sand	Clay	Brack	Calcrete	Laterite	Poorly-drained	Eroded	Other †
Entada																																
spicata	x		x	x	**x**	**x**	**2–10**	30	x			x		Fls yellow	x		<1					x	x			x			x	x		5, 7, 8?
Euphorbia																																
avasmontana		x		x			**1–2**	2	Rudiment.				x		x		<1		x	x	x	x										**3, 4, 8**
cooperi		x	x				**3–5**	10	Rudiment.				x		x			<1	x	x	x	x				x						**3, 4, 8**
grandialata		x		x			**1–2**	2,5	Rudiment.				x		x			<1	x	x	x	x										**3, 4**, 7, **8**
grandicornis		x		x			**1–2**	2,5	Rudiment.				x		x			3–6	x	x	x	x				x					x	**3, 4**, 7, **8**
ingens		x	x				**6–9**	11	Rudiment.				x			x		<1	x	x	x	x									x	**3, 4, 8**
ledienii		x		x			**1–2**	2	Rudiment.				x		x		<1	<1	x	x	x	x										**3, 4, 8**
pseudocactus		x		x			**0,5–1**	1,5	Rudiment.				x		x			<1	x	x	x	x									x	**3, 4, 8**
tirucalli		x	x				**3–5**	12	Rudiment.				x						x	x	x	x			x		x				x	2, 3, 4, 8
virosa		x		x			**1–2**	2,5	Rudiment.				x		x		<1		x	x	x	x										**3, 4, 8**
Flacourtia																																
indica	x		x	x			**3–5**	15	x	x		x	x	Frs red/purple, E		x		3–6	x			x				x					x	1, 2
Gardenia																																
amoena	x		x	x			**2–4**	7	x			x		**Fls white, S**; Frs E	x			1				x										1, 7
volkensii	x		x				**3–5**	8	x			x	x	**Fls white, S**; Frs grey					x	x		x			**x**	x	x					
Lebeckia																																
macrantha	x		x	**x**			**1–2**	2,5		x			x		x			3–6				x						x				
Lycium																																
afrum	x		x	**x**			**0,5–1,5**	5	x			x	x		x			3–6				x										2, 3, 5
ferocissimum	x			x			**1–2**	2,5		x			?		x			3–6				x	x		x			x				3, 7
hirsutum	x		x	**x**			**1–2**	2,5		x		x			x			1–3				x		x	x			x			x	7
oxycarpum	x		x	**x**			**1–3**	4,5		x			x		x			1–3	x			x			x			x				7
prunus-spinosa	x			x			**0,5–1,5**	3		x		?	?		x			3–6				x		x			x	x		x		
Maclura																																
africana	x		x	**x**	**x**	x	**2–3**	12	x			?		Fls S	x			3–6	x	x		x	x									4
Maytenus																																
capitata	x			x			**1–2**	6		x		x			x			3–6				x										7

† 1, ability to coppice; 2, responds to trimming; 3, poisonous; 4, irritant; 5, resists sea winds; 6, shade tolerant; 7, partially shade tolerant; 8, browse-resistant. * Insufficient data. # Only tolerance of 'adverse' and not optimal conditions are included. A species tolerance of any of these 'adverse' conditions may only be marginal but it has been noted. Bold type used under the heading Life form = most frequently encountered form; Height, Foliage = the usual condition; other columns = well-developed characteristics.

TABLE 2.—Recommended indigenous security hedge plants : species descriptions and miscellaneous information (continued)

Species name	Description																					Miscellaneous													
	Woodiness		Life form				Height		Foliage					Flowers and fruits	Armature (thorns)				Propagation			Substrate, soil and moisture #										
																	Average length (cm)															
	Woody	Succulent	Tree	Shrub	Scandent shrub	Climber	Average (m)	Maximum (m)	Dark green	Light green	Grey-green	Evergreen	Deciduous	Colour of (Fl)owers — scented (S) and (Fr)uits — edible (E)	Always armed	Sometimes armed	Hooked	Straight	From seed	From cuttings	From truncheons	Stony	Beach dune	Desert dune	Other deep sand	Clay	Brack	Calcrete	Laterite	Poorly-drained	Eroded	Other †
Maytenus																																
heterophylla	x		x	**x**			**2–4**	9		x	x	x		**Fls cream**	x			3–6	x	x		x	x	x		x	x	x	x	x		1,4,5,7,8?
polyacantha	x			**x**			**1,5–3**	4		x	x	x			x			3	x			x				x					x	1, 7
senegalensis	x		x	**x**			**2–3**	8		x	x	x		Fls white		x		3				x				x		x		x		7, 8?
Mucuna																																
coriacea subsp. *irritans*	x					x	3?	*		x		x	x	Fls red								x									x	**4**, 7, 8?
Nylandtia																																
spinosa	x			x			**1–1,5**	2,5		x			x		x			<1	x				x		x			x				
Obetia																																
tenax	x		x	x			**3–5**	16		x			x	Fls S					x	x		x										1, **4**, 7, **8**
Oncoba																																
spinosa	x		x	x			**3–5**	8	x			x		**Fls white, S**; Frs yellow, E	x			3–6	x			x				x				x		6
Parkinsonia																																
africana	x		x	x			**3–5**	6			x		x	**Fls yellow**	x			1–3	x			x		x				x			x	
Phaeoptilum																																
spinosum	x		x	**x**			**1–2**	6		x			x		x			3–6	x			x			x	x		x			x	8?
Phoenix																																
reclinata	x		**x**	x			**3–5**	10	x			x		Fls cream; Frs orange, E	x			6	x											**x**		1, 7, 8
Pisonia																																
aculeata	x		x		x	**x**	*	18?	x			x		Fls S	x		<1						x									
Protasparagus																																
aethiopicus	x				x	**x**	**1–2**	4		x		?	?	**Fls S**	x		<1					x	x									5, 7
africanus	x			x	x	x	**1–2**	3		x		?	?	Fls S	x			<1				x	x									1, 7
angusticladus	x				x	**x**	**2–3**	5		x		x	x	**Fls S**	x		<1					x						x				7
capensis	x			x	x		**0,2–0,6**	2		x		?	?		x		<1	<1				x	x		x		x			x		1, 5, 7
krebsianus	x			x	x	x	**0,3–1**	3	x			?	?		x		<1					x										
laricinus	x			x	x	x	**1–2**	2	x	x			x	Fls S	x		<1		x			x				x		x		x		7
racemosus	x			x	x	x	**1–2**	4		x		?	?		x		<1					x										7
Pterolobium																																
stellatum	x				x	x	**3–5**	10	x			x	x	**Fls cream**, S; **Frs red**	x		<1		x			x				x					x	

† 1, ability to coppice; 2, responds to trimming; 3, poisonous; 4, irritant; 5, resists sea winds; 6, shade tolerant; 7, partially shade tolerant; 8, browse-resistant. * Insufficient data. # Only tolerance of 'adverse' and not optimal conditions are included. A species tolerance of any of these 'adverse' conditions may only be marginal but it has been noted. Bold type used under the heading Life form = most frequently encountered form; Height, Foliage = the usual condition; other columns = well-developed characteristics.

TABLE 2.—Recommended indigenous security hedge plants : species descriptions and miscellaneous information (continued)

Species name	Description																			Miscellaneous													
	Woodiness		Life form				Height		Foliage					Flowers and fruits	Armature (thorns)				Propagation			Substrate, soil and moisture #										Other †
																	Average length (cm)															
	Woody	Succulent	Tree	Shrub	Scandent shrub	Climber	Average (m)	Maximum (m)	Dark green	Light green	Grey-green	Evergreen	Deciduous	Colour of (Fl)owers — scented (S) and (Fr)uits — edible (E)	Always armed	Sometimes armed	Hooked	Straight	From seed	From cuttings	From truncheons	Stony	Beach dune	Desert dune	Other deep sand	Clay	Brack	Calcrete	Laterite	Poorly-drained	Eroded	
Putterlickia																																
pyracantha	x		x	**x**			**2–3**	5	x		x	x		**Frs red**	x			3–6	x	x		x	x			x		x			x	1, 4, 5, 7
verrucosa	x		x	x	x		**2–3**	6			x	x		**Frs red**	x			3–6	x	x		x	x							x	x	4, 5, 7
Rhus																																
ciliata	x			x			**1–2**	5		x		?		Fls yellow	x			1–3	x			x				x		x			x	
gueinzii	x		x	x	x		**3–5**	6			x		?	Frs E		x		3–6				x			x		x	x		x	x	7
longispina	x		x	x			**2–4**	5			x	x		Fls S		x		3–6				x	x									5, 7
pyroides	x		x	x			**3–5**	15	x	x		x	x			x	1–3	1–3				x	x			x	x	x		x	x	4, 7
refracta	x			x			**1–2**	3	x	x		?				x		1–3				x										5
Rubus																																
ludwigii	x			x			**0,5–1**	2		x			x	Frs E	x		<1		x			x									x	7
pinnatus	x			x	x	x	**1–2**	9	x	x		x	x	Frs E	x		<1		x	x		x				x				x		**6**
rigidus	x			x	x		**1–2**	3	x	x		x	x	Frs E	x		<1		x	x		x	x							x	x	7
Scolopia																																
flanaganii	x		x	x			**3–5**	12		x	x	?				x		1–3														1
mundii	x		**x**	x			**3–6**	21	x			x		Frs orange		x		1–3				x	x			x					x	1, 3, 5?, 6
zeyheri	x		x	x			**3–5**	23	x		x	?	?	Frs E		x		3	x	x		x	x			x		x		x	x	1, 5?, 6
Scutia																																
myrtina	x		x	x	**x**	**x**	**2–4**	10	x	x		x		Frs E		x	<1		x			x	x								x	5, 6
Smilax																																
kraussiana	x					x	**	5?		x		x			x		<1					x				x				x		6
Smodingium																																
argutum	x		x	x			**3–4**	8	x			x	x	**Frs red**					x			x										3?, 4, 8?
Synadenium																																
cupulare	x	x	x	**x**			**2–5**	6	x			x		Fls greenish-yellow						x		x									x	3, 4, 7, 8
Terminalia																																
prunioides	x		x	x			**3–5**	15	x			x	x	**Fls cream; Frs red/purple**					x			x				x	x	x			x	
Umtiza																																
listerana	x		**x**	x			**4–8**	12	x			x		**Fls white**	x			3–6				x										7
Urtica																																
lobulata			Herb				**0,3**	0,5		x			?									x										**4**, 6, **8**

† 1, ability to coppice; 2, responds to trimming; 3, poisonous; 4, irritant; 5, resists sea winds; 6, shade tolerant; 7, partially shade tolerant; 8, browse-resistant. ** Insufficient data; height variable, dependent on support available. # Only tolerance of 'adverse' and not optimal conditions are included. A species tolerance of any of these 'adverse' conditions may only be marginal but it has been noted. Bold type used under the heading Life form = most frequently encountered form; Height, Foliage = the usual condition; other columns = well-developed characteristics.

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Species name	Description																			Miscellaneous													
	Woodiness		Life form				Height		Foliage					Flowers and fruits	Armature (thorns)				Propagation			Substrate, soil and moisture #										Other †
	Woody	Succulent	Tree	Shrub	Scandent shrub	Climber	Average (m)	Maximum (m)	Dark green	Light green	Grey-green	Evergreen	Deciduous	Colour of (Fl)owers — scented (S) and (Fr)uits — edible (E)	Always armed	Sometimes armed	Average length (cm) Hooked	Average length (cm) Straight	From seed	From cuttings	From truncheons	Stony	Beach dune	Desert dune	Other deep sand	Clay	Brack	Calcrete	Laterite	Poorly-drained	Eroded	
Ximenia																																
americana	x		x	**x**			**1–2**	6			x	?	?	Frs orange, **E**	x			1				x			x			x		x	x	1
Ziziphus																																
mucronata subsp. *mucronata*	x		x	x			**3–6**	21		x		x	x	Frs E	x		<1	1–3				x	x	x		x	x	x		x	x	7
zeyheriana	x			x			**0,2–0,5**	1		x		?	?		x		<1	<1				x				x		x				7

† 1, ability to coppice; 2, responds to trimming; 3, poisonous; 4, irritant; 5, resists sea winds; 6, shade tolerant; 7, partially shade tolerant; 8, browse-resistant. * Insufficient data. # Only tolerance of 'adverse' and not optimal conditions are included. A species tolerance of any of these 'adverse' conditions may only be marginal but it has been noted. Bold type used under the heading Life form = most frequently encountered form; Height, Foliage = the usual condition; other columns = well-developed characteristics.

TABLE 3.—Recommended indigenous security hedge plants for trial in the hot and moist regions of southern Africa

Framework plants	Fillers
* □ *Carissa macrocarpa*	**Short:**
* □ *Dovyalis caffra*	*Carissa bispinosa* var. *bispinosa*
* *Acacia ataxacantha*	*Carissa tetramera*
* □ *Flacourtia indica*	*Azima tetracantha*
Phoenix reclinata	*Putterlickia pyracantha*
* *Acacia schweinfurthii*	*Ximenia americana*
Entada spicata	**Tall:**
* *Capparis tomentosa*	*Balanites maughamii*
* *Pterolobium stellatum*	**Irritant:**
* *Maclura africana*	*Mucuna coriacea* subsp. *irritans*
* □ *Oncoba spinosa*	*Obetia tenax*
* *Acacia kraussiana*	*Synadenium cupulare*
□ *Dovyalis rhamnoides*	*Euphorbia cooperi*
* □ *Aloe arborescens*	*Euphorbia ingens*

Entanglers	Fence reinforcers
Scutia myrtina	*Acacia schweinfurthii*
Capparis sepiaria	*Acacia ataxacantha*
Capparis fascicularis	*Acacia kraussiana*
Smilax kraussiana	*Entada spicata*
Dalbergia armata	*Pterolobium stellatum*
Protasparagus racemosus	*Capparis sepiaria*
Protasparagus laricinus	*Capparis tomentosa*
	Pisonia aculeata

Ornamental

Foliage, flowers and/or fruits attractive	**Flowers and/or fruits attractive**
Aloe arborescens	*Pterolobium stellatum*
Carissa macrocarpa	*Oncoba spinosa*
Acacia ataxacantha	*Gardenia amoena*
Acacia schweinfurthii	*Gardenia volkensii*
Acacia kraussiana	*Dovyalis caffra*
Entada spicata	*Capparis tomentosa*
Oncoba spinosa	*Ehretia rigida*
Foliage and growth form attractive	*Maytenus heterophylla* (flowers attractive but often have a strong unpleasant smell)
Aloe arborescens	
Phoenix reclinata	

Browse-resistant

Euphorbia cooperi	*Capparis tomentosa*
Euphorbia ingens	*Capparis sepiaria*
Euphorbia tirucalli	

* Prior use as a hedge; □ species which maintain ground density the best.

TABLE 4.—Recommended indigenous security hedge plants for trial in the hot and dry regions of southern Africa

Framework plants	Fillers
□ ◆ *Euphorbia grandicornis*	**Short:**
◆ *Euphorbia cooperi*	*Maytenus capitata*
□ * *Commiphora pyracanthoides*	*Maytenus polyacantha*
	Lycium ferocissimum
□ * *Commiphora africana*	*Lycium hirsutum*
□ * *Lycium afrum*	*Lycium prunus-spinosa*
□ * *Lycium ferocissimum*	*Carissa bispinosa* var. *bispinosa*
◆ *Euphorbia tirucalli*	*Carissa tetramera*
◆ *Euphorbia ingens*	*Carissa haematocarpa*
□ ◆ *Euphorbia grandialata*	*Commiphora pyracanthoides*
□ ◆ *Euphorbia virosa*	*Commiphora africana*
□ * *Dovyalis caffra*	*Acacia hebeclada* subsp. *hebeclada*
□ * *Rhus longispina*	*Euphorbia grandicornis*
□ +*Acacia luederitzii* var. *retinens*	*Azima tetracantha*
	Tall:
□ +*Acacia senegal* var. *rostrata*	*Acacia nigrescens*
Acacia grandicornuta	*Acacia senegal* var. *leiorhachis* and other *Acacia* spp.
Acacia erubescens	
Acacia mellifera subsp. *detinens*	*Balanites maughamii*
	Lycium oxycarpum
Acacia ataxacantha	**Irritant:**
+*Capparis tomentosa*	*Obetia tenax*
+*Capparis sepiaria*	*Euphorbia grandicornis*
□ *Lycium oxycarpum*	*Euphorbia ledienii*
□ +*Phaeoptilum spinosum*	*Euphorbia pseudocactus*
	Euphorbia cooperi
	Euphorbia tirucalli
	Euphorbia virosa
	Euphorbia ingens
	Mucuna coriacea subsp. *irritans* (in moist places)

Entanglers	Fence reinforcers
Capparis sepiaria	*Capparis tomentosa*
Capparis fascicularis	*Capparis sepiaria*
Protasparagus spp.	*Acacia ataxacantha*
Scutia myrtina	*Scutia myrtina*
	Rhus gueinzii

Browse-resistant

Euphorbia grandicornis	*Euphorbia virosa*
Euphorbia cooperi	*Acacia luederitzii* var. *retinens*
Euphorbia ingens	*Capparis* spp.
Euphorbia grandialata	*Maytenus* spp.

Ornamental

Flowers and/or fruits attractive	**Flowers attractive:**
Terminalia prunioides (flowers and fruits attractive, but flowers have a very strong, sickly sweet smell)	All the *Acacia* spp.
	Gardenia volkensii
	Ehretia rigida
	Parkinsonia africana
Acacia ataxacantha	*Carissa haematocarpa*
Dovyalis caffra	*Capparis tomentosa*
Putterlickia pyracantha	*Maytenus heterophylla* (flowers attractive, but often have a strong, unpleasant smell)
Pterolobium stellatum	
Oncoba spinosa	*Aloe arborescens*
Attractive growth form and/or foliage	
Euphorbia cooperi	*Phoenix reclinata* (in moist places)
Euphorbia tirucalli	
Euphorbia grandialata	*Acacia schweinfurthii* (in moist places)
Euphorbia grandicornis	
Aloe arborescens	*Acacia ataxacantha*

* successful security hedges; □ species which maintain ground density the best; + occasionally browsed; ◆ browse-resistant.

TABLE 5.—Recommended indigenous security hedge plants for trial in the cold and moist regions of southern Africa

Framework plants	
* □ *Dovyalis caffra*	*Scolopia flanaganii*
* *Dovyalis zeyheri*	*Cassinopsis ilicifolia*
* *Scolopia zeyheri*	*Acacia fleckii*
* *Ehretia rigida*	*Acacia tortilis* subsp. *heteracantha*
* *Rhus pyroides*	*Acacia davyi*
* *Acacia karroo*	*Acacia exuvialis*
* *Maytenus heterophylla*	* *Scutia myrtina*
* *Scolopia mundii*	* *Ziziphus mucronata* subsp. *mucronata*

Fillers	Entanglers
Short:	*Protasparagus laricinus*
Maytenus polyacantha	*Protasparagus krebsianus*
Ziziphus zeyheriana	*Protasparagus aethiopicus*
Scutia myrtina	*Scutia myrtina*
Carissa bispinosa var. *bispinosa*	*Rubus rigidus*
Rubus ludwigii	*Rubus pinnatus*
Irritant:	
Urtica lobulata	
Smodingium argutum	

Fence reinforcers	Browse-resistant
Cassinopsis ilicifolia	*Maytenus heterophylla*
Rubus pinnatus	
Rubus rigidus	
Scutia myrtina	

Ornamental	
Flowers and/or fruits and foliage attractive:	**Flowers and/or fruits attractive:**
Smodingium argutum	*Acacia* spp.
Scolopia mundii	*Dovyalis caffra*
Cassinopsis ilicifolia	*Dovyalis zeyheri*
Aloe arborescens	*Ehretia rigida*
Acacia ataxacantha	*Maytenus heterophylla* (flowers attractive but often have a strong, unpleasant smell)

* prior use as a hedge; □ species which maintain ground density the best.

TABLE 6.—Recommended indigenous security hedge plants for trial in the cold and dry regions of southern Africa

Framework plants	Fillers
□ * *Lycium afrum*	**Short:**
□ * *Lycium ferocissimum*	*Lycium afrum*
□ * *Lycium oxycarpum*	*Lycium ferocissimum*
□ * *Dovyalis caffra*	*Lycium hirsutum*
* *Ehretia rigida*	*Lycium prunus-spinosa*
Rhus ciliata	*Maytenus polyacantha*
□ * *Putterlickia pyracantha*	*Putterlickia pyracantha*
□ *Phaeoptilum spinosum*	*Acacia hebeclada* subsp. *hebeclada*
□ *Lycium hirsutum*	*Phaeoptilum spinosum*
□ * *Commiphora pyracanthoides*	*Nylandtia spinosa*
* *Ziziphus mucronata* subsp. *mucronata*	**Irritant:**
* *Maytenus heterophylla*	*Euphorbia avasmontana*
• * *Acacia karroo*	**Tall:**
□ • *Acacia mellifera* subsp. *detinens*	*Parkinsonia africana*
• *Dichrostachys cinerea* subsp. *africana*	*Lebeckia macrantha*
	Lycium oxycarpum

Entanglers	Browse-resistant
Protasparagus laricinus	*Euphorbia avasmontana*
Protasparagus racemosus	*Maytenus heterophylla*
Protasparagus aethiopicus	*Phaeoptilum spinosum ?*
	Commiphora pyracanthoides ?

Ornamental	
Flowers or fruits attractive:	**Attractive foliage:**
Acacia spp.	*Smodingium argutum*
Ehretia rigida	**Attractive growth form:**
Rhus ciliata	*Euphorbia avasmontana*
Parkinsonia africana	
Maytenus heterophylla (flowers attractive but often have a strong, unpleasant smell)	
Dichrostachys cinerea subsp. *africana*	
Dovyalis caffra	
Putterlickia pyracantha	

* previous use as a hedge; □species which maintain ground density the best; •danger: these species may spread.

TABLE 7.—Recommended indigenous garden hedge and windbreak plants : climatic and geographic regions of occurrence

Species name		Barrier category		Climatic zone† (see Fig. 27)				Hardiness to drought and frost#				Geographic region (see Fig. 28)																						
Botanical	Common	Garden hedge	Windbreak	Hot and moist	Hot and dry	Cold and moist	Cold and dry	Frost hardy	Moderately frost hardy	Drought hardy	Moderately drought hardy	Winter rainfall	Whole-year rainfall	Eastern Cape	Natal	Zululand	Eastern Transvaal	Northern Transvaal	South West Africa	Arid region	Karoo	Highveld	Cultivated in Botanical Garden, Pretoria	Botswana	Zimbabwe	Mozambique	Swaziland	Transkei	Lesotho
												1	2	3	4	5	6	7	8	9	10	11								
Acacia																																		
ataxacantha	Flame Thorn	x		x	x	x				x					x	x	x	x	x				x	x									
karroo	Sweet Thorn		x	x	x	x	x		x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x			
schweinfurthii	River Climbing Thorn	x		x	x										x	x	x	x					x		x	x	x						
tortilis subsp. *heteracantha*	Umbrella Thorn		x	x	x	x	x		x	x					x	x	x	x	x				x		x	x	x						
Adenium																																		
multiflorum	Impala Lily	x			x					x						x	x	x										x					
Agathosma																																		
crenulata	Buchu	x		x								x											x										
Aloe																																		
arborescens	Krantz Aloe	x	x	x	x	x						x	x	x	x	x	x	x					x		x	x	x	x	x				
castanea	Cat's-Tail Aloe	x			x						x						x	x				x											
Andrachne																																		
ovalis	Bastard Lightning Bush	x		x		x							x	x	x	x	x	x							x			x	x				
Apodytes																																		
dimidiata	White Pear	x		x	•	x			x			x	x	x	x	x	x	x					x		x	x		x					
Barleria																																		
rotundifolia		x		x	x						x						x	x															
Bauhinia																																		
galpinii	Pride-of-De Kaap	x		x	x	*	*			x					*	x	x	x					x		x	x	x						
tomentosa	Bush Neat's Foot	x		x	x	*	*			x				*	x	x	x	x					x		x	x							
Bequaertiodendron																																		
magalismontanum	Transvaal Milkplum	x		x	x	x			x		x					x	x	x					x	x	x	x	x	x					
Brabejum																																		
stellatifolium	Wild Almond	x	x	x	•	*			x			x												x									
Brachylaena																																		
discolor	Forest Silver Tree	x	x	x					x		x			x	x	x	x	x								x		x	x				
neriifolia	Water White Els	x	x	x	•	x			x			x	x											x									
Buddleja																																		
auriculata	Weeping Sage	x		x		x		x						x	x	x	x							x		x	x	x	x	x			

† Climatic zone : where a species occurs naturally; * a species cultivated outside of its natural distribution; • in moist localities only; # species hardiness to drought and frost will give an indication of its suitability to other zones

TABLE 7.—Recommended indigenous garden hedge and windbreak plants : climatic and geographic regions of occurrence (continued)

Species name		Barrier category		Climatic zone† (see Fig. 27)				Hardiness to drought and frost#				Geographic region (see Fig. 28)																				
Botanical	Common	Garden hedge	Windbreak	Hot and moist	Hot and dry	Cold and moist	Cold and dry	Frost hardy	Moderately frost hardy	Drought hardy	Moderately drought hardy	Winter rainfall	Whole-year rainfall	Eastern Cape	Natal	Zululand	Eastern Transvaal	Northern Transvaal	South West Africa	Arid region	Karoo	Highveld	Cultivated in Botanical Garden, Pretoria	Botswana	Zimbabwe	Mozambique	Swaziland	Transkei	Lesotho
												1	2	3	4	5	6	7	8	9	10	11								
Buddleja salviifolia	Sagewood	x	x	x	•	x	•	x				x	x	x	x	x	x	x			x	x	x		x	x	x	x	x
Burchellia bubalina	Wild Pomegranate	x		x		x						x	x	x	x	x	x	x					x			x	x	x	
Buxus macowanii	Cape Box	x		x										x				x					x					x	
Canthium obovatum	Quar	x		x	x									x	x	x	x	x					x		x	x	x	x	
Carissa bispinosa	Num-num (Palgrave 1977)	x		x	x	x	x		x	x		x	x	x	x	x	x	x	x			x	x	x	x	x	x	x	
haematocarpa	Karroo Num-num	x			x					x		x	x	x					x		x								
macrocarpa	Large Num-num	x	x	x								*	*	x	x	x	*	*					x					x	
tetramera		x		x	x					x						x											x		
Cassine reticulata		x			x	x							x	x							x								
Cassinopsis ilicifolia	Lemon Thorn	x		x		x			x				x	x	x	x	x					x	x		x		x	x	x
tinifolia	False Lemon Thorn	x		x											x	x									x		x	x	
Chrysanthemoides monilifera	Bush-tick Berry	x	x	x	x	x		x		x		x	x	x	x	x	x		x			x	x		x	x	x	x	x
Coddia rudis	Small Bone-apple	x		x	x						x			x	x	x	x	x					x		x	x	x	x	
Coleonema album	Cape May (Eliovson 1965)	x		x	x							x																	
Crotalaria capensis	Cape Rattle-pod	x		x	x						x	x	x	x	x	x	x	x					x		x	x	x	x	
Curtisia dentata	Assegai	x		x								x	x	x	x	x	x	x					x		x	x	x	x	
Diospyros austro-africana	Fire-sticks (Palgrave 1977)	x			x	x	x	x		x		x	x	x	x		x			x	x	x	x						x

† Climatic zone : where a species occurs naturally; * a species cultivated outside of its natural distribution; • in moist localities only; # species hardiness to drought and frost will give an indication of its suitability to other zones

TABLE 7.—Recommended indigenous garden hedge and windbreak plants : climatic and geographic regions of occurrence (continued)

Species name		Barrier category		Climatic zone† (see Fig. 27)				Hardiness to drought and frost#				Geographic region (see Fig. 28)																				
Botanical	Common	Garden hedge	Windbreak	Hot and moist	Hot and dry	Cold and moist	Cold and dry	Frost hardy	Moderately frost hardy	Drought hardy	Moderately drought hardy	Winter rainfall	Whole-year rainfall	Eastern Cape	Natal	Zululand	Eastern Transvaal	Northern Transvaal	South West Africa	Arid region	Karoo	Highveld	Cultivated in Botanical Garden, Pretoria	Botswana	Zimbabwe	Mozambique	Swaziland	Transkei	Lesotho
												1	2	3	4	5	6	7	8	9	10	11								
Diospyros																														
dichrophylla	Common Star-apple	x		x	x						x	x	x	x	x	x		x					x				x	x	
lycioides	Bluebush	x	x	x	x	x	x		x	x			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
whyteana	Bladder-nut	x		x	x	x			x		x	x	x	x	x	x	x	x			x	x	x		x		x	x	x	
Dodonaea																														
angustifolia	Sand Olive	x		x	x	x	x		x	x		x	x	x	x	x	x	x	x	x	x		x		x	x		x		
Dovyalis																														
caffra	Kei-Apple	x	x	x	x	*	*		x	x		*	*	*	x	x	x	x	*	*	*		x					x	x	
zeyheri	Wild Apricot	x		x	x	x			x		x			x	x	x	x	x				x	x		x			x	x	
Duvernoia																														
adhatodoides	Pistol Bush	x		x	•							*		*	x	x	x						x					x		
Ehretia																														
rigida	Puzzle Bush	x		x	x	x	x	x		x			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Ekebergia																														
capensis	Cape Ash		x	x	•	*						*	*	x	x	x	x	x					x	x	x	x	x	x		
Erica																														
caffra	Water Heath	x	x	x	•	x			x			x	x	x	x														x	x
Erythrophysa																														
alata	Namaqua Red Balloon	x			x					x		x							x				x							
Eugenia																														
capensis	Dune Myrtle	x		x										x	x	x							x			x	x	x		
natalitia	Natal Myrtle	x		x											x	x	x	x									x	x		
Euphorbia																														
tirucalli	Rubber Euphorbia	x		x	x	x				x					x	x	x	x					x		x	x	x	x		
Euryops																														
virgineus		x		x	x	*			x		x	x	x	x									x						x
Ficus																														
natalensis	Natal Fig		x	x	•										x	x							x			x				
Ficus																														
sur	Broom Cluster Fig		x	x	•							*	x	x	x	x	x	x				x	x	x	x	x	x	x		

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TABLE 7.—Recommended indigenous garden hedge and windbreak plants : climatic and geographic regions of occurrence (continued)

Species name		Barrier category		Climatic zone† (see Fig. 27)				Hardiness to drought and frost#				Geographic region (see Fig. 28)																				
Botanical	Common	Garden hedge	Windbreak	Hot and moist	Hot and dry	Cold and moist	Cold and dry	Frost hardy	Moderately frost hardy	Drought hardy	Moderately drought hardy	Winter rainfall	Whole-year rainfall	Eastern Cape	Natal	Zululand	Eastern Transvaal	Northern Transvaal	South West Africa	Arid region	Karoo	Highveld	Cultivated in Botanical Garden, Pretoria	Botswana	Zimbabwe	Mozambique	Swaziland	Transkei	Lesotho
												1	2	3	4	5	6	7	8	9	10	11								
Flacourtia																														
indica	Governor's Plum	x		x	•										*		x	x				x	x	x	x				
Freylinia																														
tropica	Transvaal Honey Bell Bush	x				x			x									x					x		x	x			
Gardenia																														
amoena	Thorny Gardenia	x		x	•									x	x	x	x	x					x			x	x	x	
cornuta	Natal Gardenia	x	x	x	x						x				x	x							x				x			
jovis-tonantis	Yellow Gardenia	x			x						x							x	x					x	x	x				
resiniflua	Gummy Gardenia	x			x					x							x	x	x					x	x	x				
thunbergii	White Gardenia	x	x	x										x	x	x							x			x	x	x		
volkensii	Transvaal Gardenia	x	x	x	x					x					x	x	x	x	x				x	x	x	x	x			
Grewia																														
flavescens	Rough-leaved Raisin	x		x	x					x						x	x	x	x				x	x	x	x	x			
occidentalis	Cross-berry	x		x	x	x			x		x	x	x	x	x	x	x	x					x		x	x	x	x	x	
Greyia																														
sutherlandii	Natal Bottlebrush	x		x		x		x			x	*	*	*	x	x	x	*					x				x	x		
Halleria																														
lucida	Tree Fuchsia	x		x	x	x		x			x	x	x	x	x	x	x	x				x	x		x		x	x	x	
Harpephyllum																														
caffrum	Wild Plum	x	x	x							x	*	*	x	x	x	x	x					x			x	x	x		
Hibiscus																														
ludwigii		x		x										x	x													x		
pedunculatus		x		x										x	x	x	x	x										x	x	
tiliaceus	Wild Cotton Tree	x		x										x	x	x							x			x		x		
Hippobromus																														
pauciflorus	Bastard Horsewood	x		x	•	x			x				x	x	x	x	x	x										x	x	
Homalium																														
rufescens	River Bastard Mulberry	x		x	x									x	x														x	
Hypericum																														
revolutum	Curry Bush	x		x		x		x				*			x	x	x	x					x				x			

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TABLE 7.—Recommended indigenous garden hedge and windbreak plants : climatic and geographic regions of occurrence (continued)

Species name		Barrier category		Climatic zone† (see Fig. 27)				Hardiness to drought and frost#				Geographic region (see Fig. 28)																				
Botanical	Common	Garden hedge	Windbreak	Hot and moist	Hot and dry	Cold and moist	Cold and dry	Frost hardy	Moderately frost hardy	Drought hardy	Moderately drought hardy	Winter rainfall	Whole-year rainfall	Eastern Cape	Natal	Zululand	Eastern Transvaal	Northern Transvaal	South West Africa	Arid region	Karoo	Highveld	Cultivated in Botanical Garden, Pretoria	Botswana	Zimbabwe	Mozambique	Swaziland	Transkei	Lesotho
												1	2	3	4	5	6	7	8	9	10	11								
Jubaeopsis																														
caffra	Pondo Coconut	Screen		x																			x				x		
Kiggelaria																														
africana	Wild Peach		x	x	•	x		x			x	x	x	x	x	x	x	x				x	x		x	x	x	x	x	x
Lannea																														
discolor	Live-long	x		x	x	x					x					x	x	x	x			x	x	x	x	x	x			
Leucadendron																														
coniferum	Dune Yellowbush	x		x	x	x					x	x	x	x									x							
platyspermum		x		x	x						x	x																		
salicifolium	River Conebush	x		x	•	x						x											x							
salignum		x		x	x	x					x	x	x	x									x							
uliginosum		x		x	x	x	x				x	x	x										x							
Loxostylis																														
alata	Tenderwood	x		x	x						x		x	x	x								x					x		
Lycium																														
afrum	Kraal Honey-thorn		x		x		x	x		x		x	x	x																
ferocissimum	African Boxthorn		x		x		x	x		x		x	x	x						x		x						x		
Maerua																														
cafra	Bush-cherry	x		x	x	x					x			x	x	x	x	x				x	x		x	x	x	x		
Maytenus																														
heterophylla	Common Spike-thorn	x	x	x	x	x	x	x		x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
polyacantha	Kraal Spike-thorn	x			x	x	x		x	x			x	x			x	x			x	x	x							
senegalensis	Red Spike-thorn	x		x	x						x	*		*	x	x	x	x	x					x	x	x	x			
Melianthus																														
comosus	Kruidjie-roer-my-nie	x			x	x	x	x		x		x	x	x					x	x	x	x	x							x
Mimusops																														
caffra	Coast Red Milkwood		x	x								*		x	x	x							x			x		x	
Mundulea																														
sericea	Cork Bush	x		x	x	x			x	x						x	x	x	x			x	x	x	x	x	x			

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TABLE 7.—Recommended indigenous garden hedge and windbreak plants : climatic and geographic regions of occurrence (continued)

Species name		Barrier category		Climatic zone† (see Fig. 27)				Hardiness to drought and frost†#				Geographic region (see Fig. 28)																				
Botanical	Common	Garden hedge	Windbreak	Hot and moist	Hot and dry	Cold and moist	Cold and dry	Frost hardy	Moderately frost hardy	Drought hardy	Moderately drought hardy	Winter rainfall	Whole-year rainfall	Eastern Cape	Natal	Zululand	Eastern Transvaal	Northern Transvaal	South West Africa	Arid region	Karoo	Highveld	Cultivated in Botanical Garden, Pretoria	Botswana	Zimbabwe	Mozambique	Swaziland	Transkei	Lesotho
												1	2	3	4	5	6	7	8	9	10	11								
Myrsine africana	Cape Myrtle	x		x	x	x		x				x	x	x	x	x	x	x			x	x	x		x	x	x	x	x
Nymania capensis	Chinese Lanterns	x			x		x		x	x		x	x	x					x	x	x		x							
Ochna natalitia	Natal Plane	x		x	x	x			x		x		x	x	x	x	x	x					x		x	x	x	x	
Ochna serrulata	Small-leaved Plane	x		x	x	x					x	x	x	x	x	x	x	x					x					x	x	
Olea capensis subsp. *macrocarpa*	Ironwood		x	x	x							x	x	x	x	x	x	x										x	x	
Olea capensis subsp. *africana*	Wild Olive	x	x	x	x	x	x		x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Oncoba spinosa	Snuff-box Tree	x		x	•							*				x	x	x					x	x	x	x	x		
Pavetta lanceolata	Forest Bride's Bush	x		x	•	x								x	x	x	x	x					x			x	x	x	
Peddiea africana	Poison Olive	x	x	x										x	x	x	x	x					x		x	x	x	x	
Phoenix reclinata	Wild Date Palm	Screen		x	•									x	x	x	x	x	x				x	x	x	x	x	x	
Pittosporum viridiflorum	Cheesewood	x	x	x	x	x		x			x	x	x	x	x	x	x	x					x		x	x	x	x	x	x
Plumbago auriculata	Plumbago	x		x	x	x	x		x	x		*	x	x	x	x	x	x				x	x					x		
Podocarpus elongatus	Breede River Yellowwood	x	x	x	x	x					x	x											x							
Podocarpus falcatus	Outeniqua Yellowwood	x	x	x		x			x			*	x	x	x	x	x	x					x			x	x	x	
Podocarpus henkelii	Henkel's Yellowwood	x	x	x		x			x		x	*	*		x		*						x					x	
Podocarpus latifolius	Real Yellowwood	x	x	x		x		x				x	x	x	x	x	x	x					x			x	x	x	x

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TABLE 7.—Recommended indigenous garden hedge and windbreak plants : climatic and geographic regions of occurrence (continued)

Species name		Barrier category		Climatic zone† (see Fig. 27)				Hardiness to drought and frost#				Geographic region (see Fig. 28)																				
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												1	2	3	4	5	6	7	8	9	10	11								
Polygala myrtifolia	September Bush (Palgrave 1977)	x		x	x	x	x		x	x		x	x	x	x	x				x			x					x	
Portulacaria afra	Spekboom, Porkbush	x			x		x			x			x	x	x	x	x	x			x		x			x	x	x	
Pterolobium stellatum	Madagascar Thorn	x		x	•												x	x					x						
Rapanea melanophloeos	Cape Beech		x	x	x	x			x		x	x	x	x	x	x	x	x					x		x	x	x	x	
Raphia australis	Kosi Palm		x	x											*	x										x			
Rauvolfia caffra	Quinine Tree		x	x	•	x					x				x	x	x	x				x	x			x	x	x	
Rhamnus prinoides	Dogwood	x		x	•	x		x			x		x	x	x	x	x	x			x	x	x			x	x	x	x
Rhigozum brevispinosum	Short-thorn Pomegranate	Screen			x		x		x	x								x	x			x	x	x						
Rhigozum obovatum	Yellow Pomegranate	x			x	x	x		x	x			x	x			x	x	x	x	x	x	x							
Rhus erosa	Broom Karree	x			x	x	•	x			x			x							x	x	x							x
incisa	Rub-rub Berry		x	x	x					x		x	x	x																
lancea	Karree	x	x	x	x	x	x	x		x		x	x	x			x	x	x	x	x	x	x	x	x					
leptodictya	Mountain Karree	x	x	x	x	x	x	x		x							x	x				x	x	x	x	x	x			
longispina	Thorny Currant		x	x	x					x			x	x							x									
montana	Drakensberg Karree	x		x	x										x		x					x					x	x	x
pyroides	Common Wild Currant	x		x	x	x	x	x		x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
undulata	Kuni-bush	x		x	x	x	x	x		x		x	x	x	x	x			x	x	x	x	x						x	x
Rinorea angustifolia	White Violet-bush	x		x		x									x	x	x	x					x			x	x	x		

† Climatic zone : where a species occurs naturally; * a species cultivated outside of its natural distribution; • in moist localities only; # species hardiness to drought and frost will give an indication of its suitability to other zones

TABLE 7.—Recommended indigenous garden hedge and windbreak plants : climatic and geographic regions of occurrence (continued)

Species name		Barrier category		Climatic zone† (see Fig. 27)				Hardiness to drought and frost#				Geographic region (see Fig. 28)																				
Botanical	Common	Garden hedge	Windbreak	Hot and moist	Hot and dry	Cold and moist	Cold and dry	Frost hardy	Moderately frost hardy	Drought hardy	Moderately drought hardy	Winter rainfall	Whole-year rainfall	Eastern Cape	Natal	Zululand	Eastern Transvaal	Northern Transvaal	South West Africa	Arid region	Karoo	Highveld	Cultivated in Botanical Garden, Pretoria	Botswana	Zimbabwe	Mozambique	Swaziland	Transkei	Lesotho
												1	2	3	4	5	6	7	8	9	10	11								
Schotia																														
afra	Karroo Boer-bean		x	x	x					x		x	x	x					x	x	x		x				x		
brachypetala	Weeping Boer-bean		x	x	x					x		*			x	x	x	x					x		x	x	x	x	
latifolia	Bush Boer-bean		x	x	x				x	x				x	x		x				x		x					x	
Scolopia																														
mundii	Red Pear	x		x		x			x			x	x	x	x	x	x										x	x	x
zeyheri	Thorn Pear	x		x	x	x			x				x	x	x	x	x	x				x	x	x	x	x	x	x	x	x
Securinega																														
virosa	White-berry Bush	x		x	x											x	x	x	x				x		x	x	x		
Sesbania																														
sesban	River Bean		x	x	•										x	x	x	x	x					x	x	x	x	x	
Sideroxylon																														
inerme	White Milkwood		x	x	x							x	x	x	x	x	x						x		x	x	x	x	
Strelitzia																														
alba	Cape Wild Banana	Screen		x									x										x						
caudata	Transvaal Wild Banana	Screen		x													x	x					x				x		
nicolai	Natal Wild Banana	Screen		x								*		x	x	x							x		x	x		x	
Synadenium																														
cupulare	Dead-man's Tree	x		x	x						x				x	x	x	x								x	x		
Syzygium																														
cordatum	Water Berry		x	x	•						x			x	x	x	x	x					x	x	x	x	x	x	
Tamarix																														
usneoides	Wild Tamarisk	x	x		•		•		x		x	x	x						x	x										
Tarchonanthus																														
camphoratus	Camphor Bush	x	x	x	x	x	x	x		x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Tecomaria																														
capensis	Cape Honeysuckle	x		x	x						x		x	x	x	x	x	x					x			x	x	x	
Terminalia																														
prunioides	Lowveld Cluster-leaf	Screen			x					x							x	x	x				x	x	x	x			

† Climatic zone : where a species occurs naturally; * a species cultivated outside of its natural distribution; • in moist localities only; # species hardiness to drought and frost will give an indication of its suitability to other zones

TABLE 7.—Recommended indigenous garden hedge and windbreak plants : climatic and geographic regions of occurrence (continued)

Species name		Barrier category		Climatic zone† (see Fig. 27)				Hardiness to drought and frost#				Geographic region (see Fig. 28)																				
Botanical	Common	Garden hedge	Windbreak	Hot and moist	Hot and dry	Cold and moist	Cold and dry	Frost hardy	Moderately frost hardy	Drought hardy	Moderately drought hardy	Winter rainfall	Whole-year rainfall	Eastern Cape	Natal	Zululand	Eastern Transvaal	Northern Transvaal	South West Africa	Arid region	Karoo	Highveld	Cultivated in Botanical Garden, Pretoria	Botswana	Zimbabwe	Mozambique	Swaziland	Transkei	Lesotho
												1	2	3	4	5	6	7	8	9	10	11								
Trichilia emetica	Natal Mahogany	x	x	x	•						x				x	x	x	x					x	x	x	x	x			
Turraea obtusifolia	Small Honeysuckle Tree (Palgrave, 1977)	x		x	x	x					x			x	x	x	x	x				x	x	x	x	x	x	x		
Vepris undulata	White Ironwood		x	x	x								x	x	x	x	x	x					x			x	x	x		
Virgilia oroboides	Blossom Tree		x	x	x	*			x		x	x	x	x									x							
Widdringtonia cedarbergensis	Clanwilliam Cedar	x	x	x		x			x		x	x											x							
nodiflora	Mountain Cypress	x	x	x		x			x		x	x	x	x	x		x	x					x		x	x		x		
schwarzii	Willowmore Cedar	x	x			*	x		x		x		x										x							
Ziziphus mucronata subsp. *mucronata*	Buffalo-thorn	x	x	x	x	x	x	x		x				x	x	x	x	x	x	x		x	x	x	x	x	x	x		

† Climatic zone : where a species occurs naturally; * a species cultivated outside of its natural distribution; • in moist localities only; # species hardiness to drought and frost will give an indication of its suitability to other zones

TABLE 8.—Recommended indigenous garden hedge and windbreak plants : species descriptions and miscellaneous information

Species name	Description: Woodiness: Woody	Succulent	Life form: Tree	Shrub	Scandent shrub	Climber	Height: Average (m)	Maximum (m)	Foliage: Dark green	Light green	Grey/blue-green	Evergreen	Deciduous	Flowers and fruits: Colour of (Fl)owers — scented (S) and (Fr)uits — edible (E)	Armature (thorns): Always armed	Sometimes armed	Miscellaneous: Propagation: From seed	From cuttings	From truncheons	Substrate, soil and moisture #: Stony	Beach dune	Desert dune	Other deep sand	Clay	Brack	Calcrete	Laterite	Poorly-drained	Eroded	Other †
Acacia																														
ataxacantha	x		x	**x**	**x**	**x**	3–5	15	x			x	x	Fls cream, S; Frs red	x		x			x		x							x	1
karroo	x		x	x			5–7	22	x	x		x	x	Fls yellow, S	x		x			x			x	x	x	x		x	x	1, 5
schweinfurthii	x		x	x	**x**	**x**	3–5	15	x			x		Fls cream, S	x		x											x		8?
tortilis subsp. *heteracantha*	x		**x**	x			5–8	20	x			x		Fls cream, S	x		x			x			x						x	1, 3?
Adenium																														
multiflorum		x		x			1–1,5	2		x			x	Fls white & pink			x						x	x	x					3
Agathosma																														
crenulata	x			x			1–2	4		x		x		Fls white			x	x												
Aloe																														
arborescens		x	x	**x**			2–3	5			x	x		Fls red			x	x		x										
castanea		x	x	x			3–4	4,5			x	x		Fls chestnut			x			x										
Andrachne																														
ovalis	x		x	**x**			1–3	6	x	x		x																		3, 7
Apodytes																														
dimidiata	x		**x**	x			4–6	25	x			x		Fls white, S; Frs black & red			x			x			x							
Barleria																														
rotundifolia	x			x			1–2	2		x		?	?	Fls yellow	x		x			x										7
Bauhinia																														
galpinii	x		x	**x**		x	1–3	9		x		x	x	Fls red			x	x		x										5
tomentosa	x		x	**x**			1–3	8		x		x	x	Fls yellow			x	x		x	x									5
Bequaertiodendron																														
magalismontanum	x		x	x			2–3	17	x			x		Frs red, E			x	x		x									x	1, 8?
Brabejum																														
stellatifolium	x		x	x			2–4	8		x		x		Fls white, S			x			x									x	3
Brachylaena																														
discolor	x		**x**	x			3–6	30	x			x					x			x	x			x					x	1, 2, 5, 8?
neriifolia	x		x	x			2–3	8	x			x		Fls S			x			x						x				
Buddleja																														
auriculata	x		x	**x**			1–2	4,5	x			x		Fls cream/yellow/lilac, S				x		x									x	2
salviifolia	x		x	**x**			2–3	15	x		x	x		Fls cream/lilac, S				x		x				x				x	x	2, 5

† 1, ability to coppice; 2, responds to trimming; 3, poisonous; 4, irritant; 5, resists sea winds; 6, shade tolerant; 7, partially shade tolerant; 8, browse-resistant. # Only tolerance of 'adverse' and not optimal conditions are included. A species tolerance of any of these 'adverse' conditions may only be marginal but it has been noted. Bold type used under the heading Life form = most frequently encountered form; Height, Foliage = the usual condition; other columns = well-developed characteristics.

TABLE 8.—Recommended indigenous garden hedge and windbreak plants : species descriptions and miscellaneous information (continued)

Species name	Description																Miscellaneous														
	Woodiness		Life form				Height		Foliage					Flowers and fruits	Armature (thorns)		Propagation			Substrate, soil and moisture #										
	Woody	Succulent	Tree	Shrub	Scandent shrub	Climber	Average (m)	Maximum (m)	Dark green	Light green	Grey/blue-green	Evergreen	Deciduous	Colour of (Fl)owers — scented (S) and (Fr)uits — edible (E)	Always armed	Sometimes armed	From seed	From cuttings	From truncheons	Stony	Beach dune	Desert dune	Other deep sand	Clay	Brack	Calcrete	Laterite	Poorly-drained	Eroded	Other †
Burchellia																														
bubalina	x		x	x			**2–4**	18	x			x		**Fls orange**			x	x		x	x			x				x	x	2, 5, 6
Buxus																														
macowanii	x		x				**3–7**	15	x			x					x			x	x									5, 6
Canthium																														
obovatum	x		x	x			**3–6**	20	x			x		Fls S; Frs E			x			x	x								x	
Carissa																														
bispinosa	x			x			**1–2**	5	x			x		Fls S; Frs E	x		x	x		x	x			x	x	x			x	2, 5, 7
haematocarpa	x		x	**x**			**1–2**	4	x			x		Fls white, S; Frs E	x		?	?		x										
macrocarpa	x		x	**x**			**2–4**	7,5	x			x		**Fls white, S**; Frs red, **E**	x		x	x			x									1, 2, 5, 7
tetramera	x			x			**1–2**	3	x			x		Fls S; Frs E	x		?	?		x	x								x	5, 7
Cassine																														
reticulata	x		x	**x**			**2–3**	3	x			x								x										
Cassinopsis																														
ilicifolia	x		x	**x**	**x**	x	**2–4**	10	x			x		Fls S; Frs orange	x		x			x				x				x		6
tinifolia	x		**x**	**x**	x		**3–5**	10	x			x								x								x	x	6
Chrysanthemoides																														
monilifera	x		x	**x**			**1–2**	6	x		x	x		**Fls yellow**; Frs E			x	x		x	x			x		x		x		1, 5, 6
Coddia																														
rudis	x		x	**x**	**x**		**1–2**	4	x	x		x	x	Fls S				x		x	x		x		x			x	x	3?, 5, 6
Coleonema																														
album	x			x			**0,5–1,5**	2,5		x		x		Fls white/pink, S						x	x					x				5
Crotalaria																														
capensis	x		x	**x**			**1–2**	6		x		?	?	**Fls yellow**			x				x					x		x		1, 3?, 6
Curtisia																														
dentata	x		x				**6–12**	20	x			x					x			x								x	x	6
Diospyros																														
austro-africana	x		x	**x**			**0,5–2**	10	x		x	?	?				x			x						x		x	x	6
dichrophylla	x		x	**x**			**1–3**	14	x			?	?	Frs gold			x			x	x			x					x	3, 6
lycioides	x		x	**x**			**1–3**	7,5	x	x	x	?	?	Frs red			x	x		x	x	x		x		x		x	x	3?, 6
whyteana	x		x	x			**1–6**	17	x			x					x	x		x	x			x					x	1, 2, 6

† 1, ability to coppice; 2, responds to trimming; 3, poisonous; 4, irritant; 5, resists sea winds; 6, shade tolerant; 7, partially shade tolerant; 8, browse-resistant. # Only tolerance of 'adverse' and not optimal conditions are included. A species tolerance of any of these 'adverse' conditions may only be marginal but it has been noted. Bold type used under the heading Life form = most frequently encountered form; Height, Foliage = the usual condition; other columns = well-developed characteristics.

TABLE 8.—Recommended indigenous garden hedge and windbreak plants : species descriptions and miscellaneous information (continued)

Species name	Description: Woodiness: Woody	Succulent	Life form: Tree	Shrub	Scandent shrub	Climber	Height: Average (m)	Maximum (m)	Foliage: Dark green	Light green	Grey/blue-green	Evergreen	Deciduous	Flowers and fruits: Colour of (Fl)owers — scented (S) and (Fr)uits — edible (E)	Armature (thorns): Always armed	Sometimes armed	Miscellaneous: Propagation: From seed	From cuttings	From truncheons	Substrate, soil and moisture #: Stony	Beach dune	Desert dune	Other deep sand	Clay	Brack	Calcrete	Laterite	Poorly-drained	Eroded	Other †
Dodonaea																														
angustifolia	x		x	**x**			**1–3**	10		x		x					x			x	x			x				x		2, 3, 5, 8
Dovyalis																														
caffra	x		x	**x**			**3–5**	8	x	x		x		Frs yellow, **E**	x		x			x	x									1, 2, 5, 7
zeyheri	x		x	x			**3–5**	18	x	x		x		Frs orange, **E**		x	x			x			x	x					x	1, 7
Duvernoia																														
adhatodoides	x		x	x			**3–6**	12	x			x		**Fls white/mauve,** S			x			x								x		6
Ehretia																														
rigida	x		x	**x**			**1–3**	12		x		x	x	**Fls blue/lavender/white, S**			x	x		x	x			x	x	x		x		1, 7
Ekebergia																														
capensis	x		x				**8–12**	30	x			x		**Fls white, S; Frs red**			x	x			x			x			x	x		6
Erica																														
caffra	x		x	**x**			**2–4**	4,5			x	x		Fls white, S						x								x	x	6
Erythrophysa																														
alata	x		x	x			**2–3**	4	x				?	Fls red; **Frs red**						x										
Eugenia																														
capensis	x		x	**x**			**1–3**	10	x			x		Frs E						x	x							x		5
natalitia	x		x	x			**1–6**	23	x			x		Frs E									x							1, 6
Euphorbia																														
tirucalli		x	x				**3–5**	12	Rudiment.				x				x	x	x	x			x		x				x	2, 3, 4, 8
Euryops																														
virgineus	x			x			**1–2**	3,5		x		x		Fls yellow			x	x		x								x		
Ficus																														
natalensis	x		x				**8–12**	20	x			x					x	x	x	x	x									5
sur	x		x				**8–12**	30			x	x	x	Frs E			x	x	x	x	x			x				x		1, 5?
Flacourtia																														
indica	x		x	x			**3–5**	15	x	x			x	Frs purple, **E**		x	x			x				x					x	1, 2
Freylinia																														
tropica	x		x	**x**			**1–3**	7		x		x		Fls purple/lilac/white			x	x		x								x		
Gardenia																														
amoena	x		x	x			**2–4**	7	x			x		**Fls white & pink, S;** Frs E	x					x				x				x	x	1

† 1, ability to coppice; 2, responds to trimming; 3, poisonous; 4, irritant; 5, resists sea winds; 6, shade tolerant; 7, partially shade tolerant; 8, browse-resistant. # Only tolerance of 'adverse' and not optimal conditions are included. A species tolerance of any of these 'adverse' conditions may only be marginal but it has been noted. Bold type used under the heading Life form = most frequently encountered form; Height, Foliage = the usual condition; other columns = well-developed characteristics.

TABLE 8.—Recommended indigenous garden hedge and windbreak plants : species descriptions and miscellaneous information (continued)

Species name	Description: Woodiness		Life form				Height		Foliage					Flowers and fruits	Armature (thorns)		Miscellaneous: Propagation			Substrate, soil and moisture #										Other †
	Woody	Succulent	Tree	Shrub	Scandent shrub	Climber	Average (m)	Maximum (m)	Dark green	Light green	Grey/blue-green	Evergreen	Deciduous	Colour of (Fl)owers — scented (S) and (Fr)uits — edible (E)	Always armed	Sometimes armed	From seed	From cuttings	From truncheons	Stony	Beach dune	Desert dune	Other deep sand	Clay	Brack	Calcrete	Laterite	Poorly-drained	Eroded	
Gardenia																														
cornuta	x		**x**	x			2–5	5		x		x		**Fls white, S; Frs yellow/gold**		x				x				x						1
jovis-tonantis	x		x	x			2–4	7	x	x		?		**Fls white, S**						x								x		
resiniflua	x		x	**x**			2–3	7		x		?	?	**Fls white, S**						x										
thunbergii	x		**x**	x			3–5	10		x		x		**Fls white, S;** Frs grey		x	x	x	x											7
volkensii	x		x				3–5	8	x			?	?	**Fls white, S;** Frs grey		x	x	x		x			x	x	x			x		
Grewia																														
flavescens	x			**x**	x	x	1–3	5		x		x		Fls yellow; Frs E			x			x			x	x		x		x	x	7
occidentalis	x		**x**	**x**	x	x	2–4	12		x		x	x	Fls mauve; Frs E			x	x		x	x			x				x	x	5, 7
Greyia																														
sutherlandii	x		x	x			2–4	9	x				x	**Fls red**			x	x		x										1
Halleria																														
lucida	x		x	x	x		2–5	12		x		x	x	Fls red/orange; Frs E			x	x		x								x	x	1, 2
Harpephyllum																														
caffrum	x		x				8–12	26	x			x		Frs red, **E**			x	x	x					x						1, 2, 5, 6
Hibiscus																														
ludwigii	x			x			1–2	3	x			x		Fls yellow						x										6
pedunculatus	x			x			0,5–2	2,5	x			x		**Fls purple/pink**				x		x									x	2, 4, 6
tiliaceus	x		**x**	x			3–6	12	x			x		**Fls yellow**			x	x	x		x							x		5
Hippobromus																														
pauciflorus	x		x	x			2–4	10	x			x	x	Fls S						x	x			x						3?
Homalium																														
rufescens	x		**x**	x	x		3–5	7	x			x		**Fls white,** S						x										5
Hypericum																														
revolutum	x		x	**x**			1–3	7		x		x		**Fls yellow**			x	x		x				x				x		1, 2, 7, 8
Jubaeopsis																														
caffra	x		x				3–5?	8	x	x		x		Frs E			x			x										5
Kiggelaria																														
africana	x		**x**	x			3–9	25	x	x	x	x		Frs yellowish-green			x	x		x				x		x			x	1
Lannea																														
discolor	x		x				3–6	15	x				x	Fls S; Frs E			x	x	x	x			x			x				

† 1, ability to coppice; 2, responds to trimming; 3, poisonous; 4, irritant; 5, resists sea winds; 6, shade tolerant; 7, partially shade tolerant; 8, browse-resistant. # Only tolerance of 'adverse' and not optimal conditions are included. A species tolerance of any of these 'adverse' conditions may only be marginal but it has been noted. Bold type used under the heading Life form = most frequently encountered form; Height, Foliage = the usual condition; other columns = well-developed characteristics.

TABLE 8.—Recommended indigenous garden hedge and windbreak plants : species descriptions and miscellaneous information (continued)

Species name	Description: Woodiness: Woody	Woodiness: Succulent	Life form: Tree	Life form: Shrub	Life form: Scandent shrub	Life form: Climber	Height: Average (m)	Height: Maximum (m)	Foliage: Dark green	Foliage: Light green	Foliage: Grey/blue-green	Foliage: Evergreen	Foliage: Deciduous	Flowers and fruits: Colour of (Fl)owers — scented (S) and (Fr)uits — edible (E)	Armature (thorns): Always armed	Armature (thorns): Sometimes armed	Miscellaneous: Propagation: From seed	Propagation: From cuttings	Propagation: From truncheons	Substrate, soil and moisture #: Stony	Beach dune	Desert dune	Other deep sand	Clay	Brack	Calcrete	Laterite	Poorly-drained	Eroded	Other †
Leucadendron																														
coniferum	x		x	**x**			**1–1,5**	4		x		x					x			x	x					x		x		5
platyspermum	x			x			**1**	2		x		x					x			x										
salicifolium	x		x	**x**			**2–3**	6		x		x					x			x								x	x	
salignum	x			x			**0,5–1**	2		x		x		Fls gold			x			x				x						
uliginosum	x			x			**2–3**	4,5		x	x	x					x			x										
Loxostylis																														
alata	x		**x**	x			**3–6**	15	x	x		x		Fls pink/red, S			x			x										2
Lycium																														
afrum	x		x	**x**			**0,5–1,5**	5	x			x	x		x					x										2, 3, 5
ferocissimum	x			x			**1–2**	2,5		x			?		x					x	x		x			x				3, 7
Maerua																														
cafra	x		x	x			**2–5**	10		x		x		Fls white, S			x	x		x	x								x	6
Maytenus																														
heterophylla	x		x	**x**			**3–5**	9		x	x	x		**Fls cream**	x		x	x		x	x		x	x	x	x	x	x		1,3?,5,7,8?
polyacantha	x		x	**x**			**1,5–3**	4		x	x	x					x			x				x					x	1, 7
senegalensis	x		x	**x**			**2–3**	6		x	x	x		Fls white		x				x				x		x		x		7, 8?
Melianthus																														
comosus	x			x			**1–2**	2,5		x		x		**Fls red; Frs red**			x			x				x					x	3, 8?
Mimusops																														
caffra	x		x	x			**5–7**	15	x			x		Frs orange/red, E			x			x	x							x	x	5
Mundulea																														
sericea	x		x	x			**1–3**	6		x	x	x	x	**Fls mauve/purple/lilac**			x			x					x	x			x	2, 3
Myrsine																														
africana	x		x	**x**			**1–2**	7,5	x			x		Frs red			x			x	x					x		x		2, 6
Nymania																														
capensis	x		x	**x**			**1–3**	6		x		x		Fls pink/scarlet/red; **Frs red**			x	x		x						x			x	
Ochna																														
natalitia	x		x	**x**			**1–4**	18	x			x		**Fls yellow**, S; **Frs black & red**						x	x			x				x		5
serrulata	x		x	**x**			**1–2**	6	x			x		**Fls yellow**, S; **Frs black & red**			x	x		x	x								x	2, 5, 6

† 1, ability to coppice; 2, responds to trimming; 3, poisonous; 4, irritant; 5, resists sea winds; 6, shade tolerant; 7, partially shade tolerant; 8, browse-resistant. # Only tolerance of 'adverse' and not optimal conditions are included. A species tolerance of any of these 'adverse' conditions may only be marginal but it has been noted. Bold type used under the heading Life form = most frequently encountered form; Height, Foliage = the usual condition; other columns = well-developed characteristics.

TABLE 8.—Recommended indigenous garden hedge and windbreak plants : species descriptions and miscellaneous information (continued)

Species name	Description: Woodiness: Woody	Succulent	Life form: Tree	Shrub	Scandent shrub	Climber	Height: Average (m)	Maximum (m)	Foliage: Dark green	Light green	Grey/blue-green	Evergreen	Deciduous	Flowers and fruits: Colour of (Fl)owers — scented (S) and (Fr)uits — edible (E)	Armature (thorns): Always armed	Sometimes armed	Miscellaneous: Propagation: From seed	From cuttings	From truncheons	Substrate, soil and moisture #: Stony	Beach dune	Desert dune	Other deep sand	Clay	Brack	Calcrete	Laterite	Poorly-drained	Eroded	Other †
Olea																														
capensis subsp. *macrocarpa*	x		x				**10–20**	34	x			x		Fls cream, S; Frs E			x				x			x		x			x	1, 5?, 6
europaea subsp. *africana*	x		x	x			**2–8**	18	x		x	x		Fls cream, S; Frs E			x	x		x	x			x	x	x			x	1, 2, 5
Oncoba																														
spinosa	x		x	x			**3–5**	8	x			x		**Fls white, S;** Frs yellow, E	x		x			x				x				x		2, 6
Pavetta																														
lanceolata	x		x	x			**2–4**	10,5	x			x		**Fls white,** S				x		x	x			x		x		x		7
Peddiea																														
africana	x		x	x			**2–4**	9	x			x		Fls S						x	x							x		3
Phoenix																														
reclinata	x		**x**	x			**3–5**	10	x			x		**Fls cream;** Frs orange, E	x		x											**x**		1, 7, 8
Pittosporum																														
viridiflorum	x		**x**	x			**3–6**	20	x	x		x		Fls greenish-yellow/cream, S; Frs orange			x	x		x	x					x			x	2, 5, 7
Plumbago																														
auriculata	x			x	**x**	x	**1–2**	4,5		x		x		Fls blue				x		x									x	1, 2, 7
Podocarpus																														
elongatus	x		x	**x**			**1–8**	12			x	x		Frs blue-green & scarlet				x		x			x					x		
falcatus	x		x				**9–15**	60	x			x					x	x		x							x	x		2, 5, 7
henkelii	x		x				**10**	30	x			x					x													2, 6
latifolius	x		x				**5–15**	40	x			x					x	x		x	x								x	2, 5, 6
Polygala																														
myrtifolia	x		x	**x**			**1–2**	7,5		x		x		**Fls mauve**			x	x		x	x					x			x	2
Portulacaria																														
afra		x	x	**x**			**2–4**	6	x		x	x		Fls pink/purple				x		x										2
Pterolobium																														
stellatum	x				x	x	**3**	10	x			x	x	**Fls cream; Frs red**	x		x			x				x					x	
Rapanea																														
melanophloeos	x		x				**3–6**	21	x			x						x		x					x			x	x	1, 5, 6
Raphia																														
australis	x		x				**8–12?**	24			x	x					x			x								**x**		

† 1, ability to coppice; 2, responds to trimming; 3, poisonous; 4, irritant; 5, resists sea winds; 6, shade tolerant; 7, partially shade tolerant; 8, browse-resistant. # Only tolerance of 'adverse' and not optimal conditions are included. A species tolerance of any of these 'adverse' conditions may only be marginal but it has been noted. Bold type used under the heading Life form = most frequently encountered form; Height, Foliage = the usual condition; other columns = well-developed characteristics.

TABLE 8.—Recommended indigenous garden hedge and windbreak plants : species descriptions and miscellaneous information (continued)

Species name	Description																	Miscellaneous													
	Woodiness		Life form				Height		Foliage					Flowers and fruits	Armature (thorns)		Propagation			Substrate, soil and moisture #										
	Woody	Succulent	Tree	Shrub	Scandent shrub	Climber	Average (m)	Maximum (m)	Dark green	Light green	Grey/blue-green	Evergreen	Deciduous	Colour of (Fl)owers — scented (S) and (Fr)uits — edible (E)	Always armed	Sometimes armed	From seed	From cuttings	From truncheons	Stony	Beach dune	Desert dune	Other deep sand	Clay	Brack	Calcrete	Laterite	Poorly-drained	Eroded	Other †
Rauvolfia																														
caffra	x		x				**6–12**	21	x			x	x	Fls S			x			x								**x**	x	5, 6
Rhamnus																														
prinoides	x		**x**	**x**	x		**2–4**	15	x			x		Frs red/black, E			x			x									x	2, 6
Rhigozum																														
brevispinosum	x			x			**1–2**	3		x	x		x	**Fls yellow**	x					x						x				
obovatum	x			x			**1–3**	3	x	x	x		x	**Fls yellow**	x		x			x						x				2
Rhus																														
erosa	x		x	**x**	x		**1–2**	3		x		x					x			x										
incisa	x		x	x			**1–2**	4	x			?								x	x			x						5
lancea	x		x				**3–7**	18	x			x		Fls S; Frs E			x	x	x	x				x	x	x			x	1, 2
leptodictya	x		**x**	x			**3–5**	9		x		x					x			x				x					x	2
longispina	x		x	x			**2–4**	5			x	x		Fls S		x				x	x									5, 7
montana	x		x	x			**1–3**	5				?								x										
pyroides	x		x	x			**3–5**	15	x	x		x	x			x				x	x			x	x	x		x	x	4, 7
undulata	x		x	**x**			**1–3**	6	x	x		?	?	Fls S; Frs E			x			x	x			x		x			x	
Rinorea																														
angustifolia	x		x	x			**3–6**	9	x			x		**Fls white**, S				x		x	x									7
Schotia																														
afra	x		**x**	x			**2–4**	7	x			?	?	**Fls red**; Frs brown			x			x		x				x				
brachypetala	x		x				**5–10**	18	x			x	x	**Fls red**; Frs brown			x			x				x	x	x			x	2
latifolia	x		x				**3–7**	15	x			x		**Fls pink**; Frs brown			x			x	x					x			x	
Scolopia																														
mundii	x		x				**3–6**	21	x			x		Frs orange/yellow		x				x	x			x						1, 3, 5?, 6
zeyheri	x		x	x			**3–5**	23	x		x	?	?	Frs E		x	x	x		x	x			x		x		x	x	1, 5?, 7
Securinega																														
virosa	x		x	**x**			**1–3**	6		x		x	x	Fls S; Frs E		x				x				x		x			x	
Sesbania																														
sesban	x		**x**	x			**2–3**	7,5		x	x	?		Fls yellow										x				x	x	
Sideroxylon																														
inerme	x		**x**	x			**4–6**	18	x			x		Frs E						x	x		x		x	x		x	x	5

† 1, ability to coppice; 2, responds to trimming; 3, poisonous; 4, irritant; 5, resists sea winds; 6, shade tolerant; 7, partially shade tolerant; 8, browse-resistant. # Only tolerance of 'adverse' and not optimal conditions are included. A species tolerance of any of these 'adverse' conditions may only be marginal but it has been noted. Bold type used under the heading Life form = most frequently encountered form; Height, Foliage = the usual condition; other columns = well-developed characteristics.

TABLE 8.—Recommended indigenous garden hedge and windbreak plants : species descriptions and miscellaneous information (continued)

Species name	Description: Woodiness: Woody	Succulent	Life form: Tree	Shrub	Scandent shrub	Climber	Height: Average (m)	Maximum (m)	Foliage: Dark green	Light green	Grey/blue-green	Evergreen	Deciduous	Flowers and fruits: Colour of (Fl)owers — scented (S) and (Fr)uits — edible (E)	Armature (thorns): Always armed	Sometimes armed	Miscellaneous: Propagation: From seed	From cuttings	From truncheons	Substrate, soil and moisture #: Stony	Beach dune	Desert dune	Other deep sand	Clay	Brack	Calcrete	Laterite	Poorly-drained	Eroded	Other †
Strelitzia																														
alba	x		x				**5–8**	10	x			x		Fls white & blue						x										
caudata	x		x				**3–5**	10	x			x		Fls white & blue/mauve						x										
nicolai	x		x				**3–5**	15	x			x		Fls white & mauve			x				x		x							
Synadenium																														
cupulare	x	x	x	**x**			**1–2**	5	x			x		Fls greenish-yellow				x		x										3, 4, 7, 8?
Syzygium																														
cordatum	x		**x**	x			**4–8**	21		x		x		Fls white, S; Frs purple, E			x			x	x			x				x	x	1, 5
Tamarix																														
usneoides	x		x	x			**3–6**	10			x	x						x			x	x		x	**x**	x		x		
Tarchonanthus																														
camphoratus	x		x	**x**			**2–5**	12			x	x		Fls white; Frs white			x			x	x	x				x		x	x	5
Tecomaria																														
capensis	x		x	**x**	**x**	x	**1–3**	7	x			x	x	**Fls orange/scarlet/yellow**			x	x		x									x	2, 7
Terminalia																														
prunioides	x		x	x			**3–5**	15	x			x	x	**Fls cream; Frs red/purple**			x			x				x	x	x			x	
Trichilia																														
emetica	x		x				**7–13**	30	x			x		Fls S; seed – orange & black			x			x	x			x				x		1, 3, 5, 7
Turraea																														
obtusifolia	x		x	**x**			**0,5–1,5**	5	x				x	**Fls white**, S; seed – crimson			x			x	x			x	x	x		x		3, 5, 7
Vepris																														
undulata	x		**x**	x			**3–10**	20	x	x		x					x			x	x							x	x	1, 6
Virgilia																														
oroboides	x		x				**3–5**	15			x	x		**Fls pink**			x			x				x						
Widdringtonia																														
cedarbergensis	x		x				**5–7**	18	x			x					x			x										
nodiflora	x		**x**	x			**4**	15	x			x					x			x	x			x						1
schwarzii	x		x				**10–15**	40	x			x					x			x										
Ziziphus																														
mucronata subsp. *mucronata*	x		x	x			**3–6**	21		x		x	x	Frs E	x		x	x		x	x	x		x	x	x		x	x	7

† 1, ability to coppice; 2, responds to trimming; 3, poisonous; 4, irritant; 5, resists sea winds; 6, shade tolerant; 7, partially shade tolerant; 8, browse-resistant. # Only tolerance of 'adverse' and not optimal conditions are included. A species tolerance of any of these 'adverse' conditions may only be marginal but it has been noted. Bold type used under the heading Life form = most frequently encountered form; Height, Foliage = the usual condition; other columns = well-developed characteristics.

TABLE 9.—Indigenous species which have been described as good hedges and/or windbreak plants

Hedges
Aloe arborescens (ornamental, informal hedge)
Bauhinia galpinii (ornamental, informal hedge)
Bauhinia tomentosa (ornamental, informal hedge)
Brabejum stellatifolium (excellent broad hedge)
Buddleja salviifolia (informal hedge)
Burchellia bubalina (formal low hedge)
Buxus macowanii (formal low hedge)
Carissa bispinosa (formal low hedge)
Carissa macrocarpa (excellent ornamental hedge)
Diospyros whyteana (excellent hedge)
Dodonaea angustifolia
Dovyalis caffra (excellent hedge)
Duvernoia adhatodoides (excellent hedge)
Ehretia rigida (informal hedge)
Erica caffra
Grewia occidentalis (informal hedge)
Halleria lucida
Harpephyllum caffrum
Hibiscus tiliaceus (ornamental hedge)
Myrsine africana
Ochna serrulata (ornamental hedge)
Olea europaea subsp. *africana*
Oncoba spinosa (ornamental hedge)
Pavetta lanceolata (excellent hedge)
Peddiea africana
Pittosporum viridiflorum
Plumbago auriculata (ornamental, informal hedge)
Podocarpus henkelii
Portulacaria afra (excellent hedge)
Rhamnus prinoides
Rhus lancea
Rhus longispina (large informal hedge)
Rhus montana
Tecomaria capensis (excellent informal hedge)
Trichilia emetica
Turraea obtusifolia (informal hedge)

Windbreaks
Carissa macrocarpa
Diospyros lycioides
Dovyalis caffra
Erica caffra (excellent windbreak)
Harpephyllum caffrum
Kiggelaria africana
Lycium afrum
Lycium ferocissimum
Mimusops caffra
Olea europaea subsp. *africana*
Podocarpus henkelii (excellent windbreak)
Podocarpus latifolius
Rhus lancea
Rhus leptodictya
Sideroxylon inerme
Trichilia emetica
Virgilia oroboides

TABLE 10.—Recommended indigenous garden hedge and windbreak plants for the four major climatic regions of southern Africa

Hot and moist regions	Hot and dry regions
Garden hedges	**Garden hedges**
Aloe arborescens	*Bauhinia galpinii*
Bauhinia galpinii	*Bauhinia tomentosa*
Brachylaena discolor	*Dodonaea angustifolia*
Burchellia bubalina	*Dovyalis caffra*
Buxus macowanii	*Ehretia rigida*
Carissa macrocarpa	*Olea europaea* subsp. *africana*
Dovyalis caffra	*Plumbago auriculata*
Duvernoia adhatodoides	*Portulacaria afra*
Harpephyllum caffrum	*Rhus lancea*
Hibiscus tiliaceus	*Rhus leptodictya*
Ochna serrulata	*Rhus longispina*
Olea europaea subsp. *africana*	*Tecomaria capensis*
Oncoba spinosa	*Turraea obtusifolia*
Pavetta lanceolata	
Peddiea africana	
Rhus montana	
Trichilia emetica	
Windbreaks	**Windbreaks**
Brabejum stellatifolium	*Acacia karroo*
Brachylaena discolor	*Diospyros lycioides*
Carissa macrocarpa	*Dovyalis caffra*
Chrysanthemoides monilifera	*Gardenia volkensii*
Dovyalis caffra	*Olea europaea* subsp. *africana*
Harpephyllum caffrum	*Rhus incisa*
Kiggelaria africana	*Rhus lancea*
Mimusops caffra	*Rhus leptodictya*
Olea capensis subsp. *macrocarpa*	*Rhus longispina*
Olea europaea subsp. *africana*	*Schotia afra*
Podocarpus henkelii	*Schotia brachypetala*
Podocarpus latifolius	*Schotia latifolia*
Sideroxylon inerme	*Tamarix usneoides*
Trichilia emetica	
Virgilia oroboides	

Cold and moist regions	Cold and dry regions
Garden hedges	**Garden hedges**
Buddleja auriculata	*Diospyros lycioides*
Buddleja salviifolia	*Dodonaea angustifolia*
Diospyros whyteana	*Dovyalis caffra*
Dovyalis caffra	*Ehretia rigida*
Ehretia rigida	*Halleria lucida*
Erica caffra	*Olea europaea* subsp. *africana*
Halleria lucida	*Pittosporum viridiflorum*
Myrsine africana	*Plumbago auriculata*
Olea europaea subsp. *africana*	*Polygala myrtifolia*
Pittosporum viridiflorum	*Rhus lancea*
Plumbago auriculata	*Rhus leptodictya*
Rhamnus prinoides	*Rhus pyroides*
Rhus lancea	
Rhus leptodictya	
Windbreaks	**Windbreaks**
Buddleja salviifolia	*Acacia karroo*
Dovyalis caffra	*Diospyros lycioides*
Erica caffra	*Dovyalis caffra*
Kiggelaria africana	*Lycium afrum*
Olea europaea subsp. *africana*	*Lycium ferocissimum*
Podocarpus henkelii	*Olea europaea* subsp. *africana*
Podocarpus latifolius	*Rhus lancea*
Rhus lancea	*Rhus leptodictya*
Rhus leptodictya	*Schotia latifolia*
Virgilia oroboides	*Tamarix usneoides*
	Tarchonanthus camphoratus
	Ziziphus mucronata subsp. *mucronata*

TABLE 11.—Indigenous spp. suggested for road-island plantings

	Spreading growth form, not suitable for narrow road-islands	Thorny spp., used as deterrents to pedestrians (see Tables 3–6)
Acacia ataxacantha	X	X
Aloe arborescens		
Bauhinia galpinii		
Bauhinia tomentosa		
Brabejum stellatifolium	X	
Buddleja salviifolia		
Capparis sepiaria		X
Capparis tomentosa	X	X
Carissa macrocarpa		X
Diospyros sp.		
Dodonaea angustifolia		
Dovyalis caffra		X
Duvernoia adhatodoides		
* *Ehretia rigida*	X	
Ehrythrophysa alata		
†*Euphorbia tirucalli*		
Gardenia cornuta		
Gardenia volkensii	X	
Grewia flavescens		
Hypericum revolutum		
Oncoba spinosa	X	X
Portulacaria afra		
Pterolobium stellatum	X	X
Rhus longispina	X	X
Strelitzia spp.		
Tarchonanthus camphoratus		
Tecomaria capensis		
Terminalia prunioides	X	
Widdringtonia nodiflora		

* recommended for freeway plantings, especially as a replacement for *Pyracantha* and *Cotoneaster* spp.
† danger: toxic latex.

TABLE 12.—Alien security hedge, garden hedge and windbreak plants that have been used or recommended for use in southern Africa. Scientific names are according to the Liberty Hyde Bailey Hortorium, 1977, and Von Breitenbach (1984)

Scientific name	Common name	Barrier category			Climatic region				Weed status			
		Security hedge	Garden hedge	Windbreak	Hot and moist	Hot and dry	Cold and moist	Cold and dry	Declared weed	Declared invader	Aggressive	Other
Abelia												
chinensis			x		x	x	x					
floribunda	Mexican Abelia		x		x		x					
x *grandiflora*	Glossy Abelia		x		x		x	x				
Abutilon spp.	Flowering Maples		x		x		x					
Acacia												
armata	Kangaroo Thorn	x			x	x						x
baileyana	Bailey's Wattle			x	x	x	x	x			x	
cultriformis	Knife-leaved Wattle		x	x	x	x	x	x				
cyclops	Red Eye, Cape Coast Wattle		x	x	x	x				x		
dealbata	Silver Wattle			x	x		x			x		
decurrens	Green Wattle			x	x	x	x				x	
longifolia	Sallow Wattle, Long-leaved Wattle		x	x	x		x			x		
mearnsii	Black Wattle				x		x			x		
melanoxylon	Blackwood			x	x		x			x		
podalyriifolia	Pearl Acacia			x	x		x				x	
pycnantha	Golden Wattle			x	x						x	
saligna	Port Jackson Willow		x	x	x	x				x		
terminalis	Peppertree Wattle, Cedar/Elata Wattle			x			x				x	
Agathis												
robusta	Queensland Kauri			x	x							
Agave												
americana	Century Plant	x			x	x	x					x
sisalana	Sisal Hemp	x			x	x						x
Agonis												
flexuosa	Willow Myrtle			x	x							
Ailanthus												
altissima	Tree-of-Heaven			x	x		x				x	
Alternanthera												
ficoidea cv. *versicolor*	Copper Alternanthera		x		x							
Anacardium												
occidentale	Cashew			x	x	x						x
Araucaria												
angustifolia	Parana Pine			x	x		x					
bidwillii	Bunya-Bunya Pine			x	x		x					
columnaris	New Caledonian Pine			x	x							
cunninghamii	Hoop Pine			x	x							
heterophylla	Norfolk Island Pine			x	x							
Atriplex												
nummularia	Old Man's Salt Bush		x		x	x	x	x				
Aucuba												
japonica	Japanese Laurel		x				x					
Berberis												
darwinii	Darwin's Barberry	x					x					
julianae	Wintergreen Barberry		x		x	x	x					
x *stenophylla*		x					x					
thunbergii	Japanese Barberry		x		x	x	x					
vulgaris	Common Barberry	x			x		x					
Bougainvillea												
glabra	Paper Flower	x	x		x	x	x					
spectabilis		x	x		x	x						
Brachychiton												
acerifolium	Australian Flame Tree			x	x							
discolor	Pink Flame Tree			x	x							
populneum	Kurrajong			x	x	x	x	x				
Brunfelsia												
pauciflora	Yesterday-Today-and-Tomorrow		x		x		x					
uniflora	Manacá		x		x							
Buxus												
sempervirens	Common Box		x				x					
Caesalpinia												
decapetala	Mauritius Thorn	x			x				x			
pulcherrima	Barbados-Pride		x		x							x
Callitris												
columellaris	White Cypress Pine		x	x	x	x	x	x				x
endlicheri	Black Cypress Pine		x	x	x	x	x	x				x

TABLE 12.—Alien security hedge, garden hedge and windbreak plants that have been used or recommended for use in southern Africa. Scientific names are according to the Liberty Hyde Bailey Hortorium, 1977, and Von Breitenbach (1984) (continued)

Scientific name	Common name	Barrier category			Climatic region				Weed status			
		Security hedge	Garden hedge	Windbreak	Hot and moist	Hot and dry	Cold and moist	Cold and dry	Declared weed	Declared invader	Aggressive	Other
Callitris preissii	Common Cypress Pine		x		x	x	x					x
Camellia sinensis	Tea Plant		x		x							
Carpinus betulus	Common Hornbeam			x			x					
Cassia corymbosa			x		x		x				x	
siamea	Kassod Tree				x	x						
Castanospermum australe	Australian Chestnut			x	x							
Casuarina cunninghamiana	Beefwood		x	x	x	x	x					
equisetifolia	Horsetail Tree		x	x	x							x
glauca	Swamp She-oak		x	x	x	x	x	x				
stricta	She-oak		x	x	x	x						
Ceanothus spp.	Redroot		x		x		x					
Cedrus deodara	Deodar		x	x	x	x	x	x				
Ceratonia siliqua	Carob		x	x	x	x	x	x				
Cereus peruvianus	Peruvian Apple, Queen of the Night	x				x			x			
Cestrum aurantiacum			x		x	x	x	x				
Chaenomeles speciosa	Japanese Flowering Quince	x	x				x					
Chamaecyparis funebris	Weeping Cypress		x	x	x		x					
lawsoniana	Lawson Cypress			x	x		x					
Clusia rosea	Balsam Apple		x		x							
Codiaeum variegatum	Garden Croton		x		x							
Coffea arabica	Coffee Tree		x		x							
Coprosma repens	Mirror Plant		x	x	x							
Cotoneaster buxifolius			x				x	x				
franchetii	Orange Cotoneaster		x	x	x	x	x	x				x
pannosus	Red Cotoneaster		x	x	x		x					x
salicifolius	Willow-leaved Cotoneaster		x	x	x		x					
Crataegus laevigata	English Hawthorn	x	x				x					x
phaenopyrum	Washington Hawthorn	x	x				x					
pubescens	Mexican Hawthorn	x	x	x			x					
Cryptomeria japonica	Japanese Cedar			x	x		x					
Cupressus glabra	Blue Cypress		x	x	x	x	x	x				
goveniana	Gowen Cypress		x	x	x		x					
lusitanica	Mexican Cypress		x	x	x		x					x
macrocarpa	Black Cypress		x	x	x		x					
sempervirens var. *horizontalis*	Common Cypress		x	x	x	x	x	x				
sempervirens var. *sempervirens*	Churchyard Cypress		x	x	x	x	x	x				
torulosa	Himalayan Cypress		x	x	x		x					
Cydonia oblonga	Common Quince		x				x					
Cytisus scoparius	Scotch Broom		x		x	x	x	x				x
Deutzia crenata	Bridal Wreath		x		x	x	x	x				
Duranta repens	Forget-me-not Tree	x	x		x	x	x	x				x
Elaeagnus pungens	Variegated Oleaster		x	x	x		x					

TABLE 12.—Alien security hedge, garden hedge and windbreak plants that have been used or recommended for use in southern Africa. Scientific names are according to the Liberty Hyde Bailey Hortorium, 1977, and Von Breitenbach (1984) (continued)

Scientific name	Common name	Barrier category			Climatic region				Weed status			
		Security hedge	Garden hedge	Windbreak	Hot and moist	Hot and dry	Cold and moist	Cold and dry	Declared weed	Declared invader	Aggressive	Other
Escallonia												
rubra			x		x		x					
Eucalyptus												
alba	White Gum			x	x							
bosistoana	Box Gum			x	x		x					
botryoides	Bangalay			x	x							
bridgesiana	Apple Box Gum			x	x	x	x	x				
calophylla	White Flowering Gum			x	x							
camaldulensis	Red Gum			x	x	x	x	x			x	
cinerea	Florist's Gum			x	x		x				x	
citriodora	Lemon-scented Gum			x	x	x	x	x				
cladocalyx	Sugar Gum			x	x	x	x	x			x	
cloeziana	Iron Gum			x	x							x
cornuta	Yate			x	x						x	
crebra	Narrow-leaved Ironbark			x	x	x	x	x				
dalrympleana	Mountain Gum			x	x		x					
delegatensis	Alpine Ash Gum			x	x		x					
diversicolor	Karri			x	x							x
elata	River Peppermint			x	x		x					
fastigiata	Cut-tail Gum			x	x		x					x
ficifolia	Red Flowering Gum			x	x							
fraxinoides	White Ash Gum			x	x		x					
globoidea	White Stringybark			x	x		x					
globulus	Blue Gum			x	x		x				x	
gomphocephala	Tuart			x	x						x	
grandis	Saligna Gum			x	x						x	
gummifera	Bloodwood			x	x							
lehmannii	Spider Gum	x	x	x	x	x					x	
macarthurii	Woollybutt			x	x		x					
maculata	Spotted Gum			x	x							
maidenii	Maiden's Gum			x	x		x					x
melliodora	Yellow Box Gum			x	x	x	x	x				
microcorys	Tallow Gum			x	x							
muelleriana	Yellow Stringybark			x	x		x					
nitens	Shiny Gum			x	x		x					
obliqua	Messmaté Gum			x	x		x					
oreades	Blue Ash Gum			x	x		x					
paniculata	Grey Ironbark			x	x	x						x
pauciflora	Snow Gum			x	x		x					
polyanthemos	Red Box Gum			x	x	x	x	x				x
punctata	Grey Gum			x	x							
quadrangulata	Soft White Box Gum			x	x							
radiata	Narrow-leaved Peppermint			x	x		x					
resinifera	Red Mahogany Gum			x	x		x					
robusta	Swamp Mahogany Gum			x	x							
rubida	Candle-bark Gum			x	x		x					
sideroxylon	Black Ironbark			x	x	x	x	x				x
sieberi	Silvertop Ash Gum			x	x		x					
smithii	Blackbutt Peppermint			x	x		x					x
torquata	Coral Gum			x	x	x	x	x				
viminalis	Ribbon Gum			x	x		x					
Eugenia												
brasiliensis	Brazilian Cherry		x		x							
eucalyptoides	Mimi		x	x	x		x					
uniflora	Surinam Cherry		x		x							
Euonymus												
japonica	Spindle Tree		x		x		x					
latifolia			x		x							
Euphorbia												
milii	Crown-of-thorns		x		x	x						
pulcherrima	Poinsettia		x		x	x						
Fabiana												
imbricata			x		x		x					
Feijoa												
sellowiana	Pineapple Guava		x		x		x					
Fucraea												
foetida	Mauritius Hemp	x			x	x						

TABLE 12.—Alien security hedge, garden hedge and windbreak plants that have been used or recommended for use in southern Africa. Scientific names are according to the Liberty Hyde Bailey Hortorium, 1977, and Von Breitenbach (1984) (continued)

Scientific name	Common name	Barrier category			Climatic region				Weed status			
		Security hedge	Garden hedge	Windbreak	Hot and moist	Hot and dry	Cold and moist	Cold and dry	Declared weed	Declared invader	Aggressive	Other
Gardenia jasminoides	Common Gardenia		x		x		x					
Gleditsia triacanthos	Honey Locust	x	x	x	x	x	x	x			x	
Gmelina arborea	White Teak			x	x							x
Grevillea robusta	Australian Silky Oak			x	x		x					x
thelemanniana			x		x		x					
Hakea gibbosa	Rock Hakea	x	x		x		x		x			
laurina	Sea-urchin Tree		x		x		x					
saligna	Willow Hakea		x	x	x		x					x
Hebe speciosa	Veronica		x		x		x					
Hibiscus rosa-sinensis	Chinese Cotton Rose		x	x	x	x						
schizopetalus	Japanese Hibiscus		x		x	x						
syriacus	Rose-of-Sharon		x		x	x	x	x				
Hippophae rhamnoides	Sea Buckthorn		x		x							
Holodiscus discolor			x		x		x					
Hypericum chinense			x		x		x					
Ilex aquifolium	English Holly		x				x					
Jasminum spp.	Jasmines		x		x	x	x	x				
Jatropha curcas	Physic Nut	x	x		x	x					x	
Juniperus communis	Common Juniper		x		x		x					
virginiana	Red Cedar		x	x	x	x	x	x				
Khaya nyasica	East African Mahogany			x	x							
Lagerstroemia indica	Pride-of-India		x		x	x	x	x				
Lagunaria patersonii	Pyramid Tree			x	x		x					
Lantana camara	Lantana		x		x	x			x			
Laurus nobilis	Greek Laurel		x		x		x					
Leptospermum laevigatum	Australian Myrtle		x	x	x	x	x			x		
petersonii				x	x		x					
scoparium var. *nicholsii*	Manuka Myrtle		x		x		x					
Ligustrum ibota	Small-leaved Privet		x	x	x		x					
japonicum	Japanese Privet		x	x	x	x	x	x				x
lucidum	Chinese Privet		x	x	x	x	x	x				x
ovalifolium	California Privet		x	x	x		x					
Liquidambar styraciflua	Sweet Gum			x	x		x					
Lonicera nitida			x		x		x					
Maclura pomifera	Osage Orange		x	x	x	x	x	x				x
Magnolia grandiflora	Laurel Magnolia			x	x		x					
Mahonia aquifolium	Holly Mahonia		x		x	x	x	x				
japonica			x				x					
Malpighia glabra	Barbados Cherry	x			x							
Melaleuca spp.	Honey Myrtles			x	x	x	x	x				
Metrosideros excelsus	New Zealand Bottlebrush		x	x	x							

TABLE 12.—Alien security hedge, garden hedge and windbreak plants that have been used or recommended for use in southern Africa. Scientific names are according to the Liberty Hyde Bailey Hortorium, 1977, and Von Breitenbach (1984) (continued)

Scientific name	Common name	Barrier category			Climatic region				Weed status			
		Security hedge	Garden hedge	Windbreak	Hot and moist	Hot and dry	Cold and moist	Cold and dry	Declared weed	Declared invader	Aggressive	Other
Michelia champaca	Champac Magnolia			x	x							
Morus alba	White Mulberry		x	x	x	x	x	x			x	
nigra	Black Mulberry			x	x	x	x	x				
Murraya paniculata	Orange Jessamine		x		x	x						
Myoporum serratum	Manatoka		x	x	x	x					x	
Myrtus communis	Common Myrtle		x		x		x	x				
Nandina domestica	Japanese Sacred 'Bamboo'		x				x					
Nerium oleander	Oleander		x		x	x	x	x			x	
Opuntia ficus-indica	Sweet Prickly Pear	x				x		x	x			
Parkinsonia aculeata	Jerusalem Thorn		x	x	x	x	x	x			x	
Pedilanthus titymaloides	Japanese Poinsettia		x		x	x						
Pereskia aculeata	Barbados Gooseberry	x	x		x				x			
Philadelphus inodorus var. *grandiflorus*	Mock Orange		x		x	x	x	x				
Phoenix canariensis	Canary Date Palm			x	x	x	x	x				
Photinia serrulata	Chinese Hawthorn		x	x	x		x					
Phytolacca dioica	Belhambra			x	x	x						x
Pinus canariensis	Canary Pine		x	x	x	x	x	x			x	
cembroides	Mexican Stone Pine			x	x	x	x	x				
elliottii	Slash Pine			x	x		x				x	
engelmannii	Apache Pine			x	x		x					
halepensis	Aleppo Pine	x	x	x	x	x	x	x			x	
michoacana	Michoacan Pine			x	x		x					
montezumae	Montezuma Pine			x	x		x					
palustris	Longleaf Pine			x	x		x					
patula	Patula Pine			x	x		x				x	
pinaster	Cluster Pine			x	x		x			x		
pinea	Umbrella Pine			x	x	x	x	x				x
pseudostrobus	False Weymouth Pine			x	x		x					
radiata	Radiata Pine			x	x	x	x	x			x	
roxburghii	Chir Pine			x	x	x	x	x				x
sabiniana	Digger Pine			x	x	x	x	x				
taeda	Loblolly Pine			x	x		x					x
Pittosporum crassifolium	Stiff-leaved Cheesewood		x	x	x		x					
eugenioides	Tarata Cheesewood		x	x	x	x	x	x				
rhombifolium	Queensland Cheesewood		x	x	x		x					
tenuifolium	Spot-leaved Cheesewood		x		x	x	x	x				
tobira	Japanese Cheesewood		x	x	x	x	x	x				
undulatum	Australian Cheesewood		x	x	x		x				x	
Platycladus orientalis	Chinese Arborvitae		x	x	x	x	x	x				
Populus alba	White Poplar			x	x	x*	x	x*			x	
X *canescens*	Grey Poplar			x	x	x*	x	x*			x	
nigra var. *italica*	Lombardy Poplar			x	x	x*	x	x*				x
nigra var. *italica* cv. *sempervirens*	Chilean Poplar			x	x	x*	x	x*				
wislizenii	Valley Match Poplar			x	x	x*	x	x*				
Prosopis glandulosa	Mesquite		x	x	x	x	x	x		x		

* in moist localities only

TABLE 12.—Alien security hedge, garden hedge and windbreak plants that have been used or recommended for use in southern Africa. Scientific names are according to the Liberty Hyde Bailey Hortorium, 1977, and Von Breitenbach (1984) (continued)

Scientific name	Common name	Barrier category			Climatic region				Weed status			
		Security hedge	Garden hedge	Windbreak	Hot and moist	Hot and dry	Cold and moist	Cold and dry	Declared weed	Declared invader	Aggressive	Other
Prunus												
cerasifera	Cherry Plum		x				x					
cerasifera cv. *atropurpurea*	Purple-leaved Plum		x		x		x					
laurocerasus	Cherry Laurel		x				x					
serotina	Black Cherry			x	x		x					x
Punica												
granatum	Pomegranate	x	x					x				
Pyracantha												
angustifolia	Yellow Fire-thorn	x	x		x	x	x	x			x	
coccinea	Red Fire-thorn	x	x		x		x				x	
Quercus												
canariensis	Algerian Oak			x	x		x					x
cerris	Turkey Oak			x	x		x					
coccinea	Scarlet Oak			x	x		x					
ilex	Holly Oak			x	x	x	x	x				
incana	Hairy Oak			x	x		x					
mexicana	Mexican Oak			x	x		x					
nigra	Water Oak			x	x		x					
palustris	Pin Oak			x	x		x					
reticulata	Evergreen Oak			x	x		x					
robur	English Oak			x	x		x				x	
suber	Cork Oak			x	x	x	x	x				x
Raphiolepis												
indica	Indian Hawthorn		x									
Rhamnus												
alaternus	Italian Dogwood		x		x	x	x	x				
Rhododendron spp.	Azaleas and Roscbays		x		x							
Ribes												
sanguineum	Flowering currant		x				x					
Rosa spp.	Roses	x	x				x					
Salix												
bonplandiana	Mexican Willow			x	x		x					
Schinus												
molle	Pepper Tree			x	x	x	x	x			x	
terebinthifolius	Brazilian Pepper Tree		x	x	x		x				x	
Spartium												
junceum	Spanish Broom		x		x		x					x
Spathodea												
campanulata	African Flame Tree			x	x							
Spiraea												
prunifolia	Cape May		x		x	x	x	x				
salicifolia			x		x		x					
Stenocarpus												
sinuatus	Firewheel Tree			x	x							
Syncarpia												
glomulifera	Turpentine Tree			x	x							x
hillii	Hill's Turpentine Tree			x	x							
Syzygium												
jambos	Malabar Plum			x	x							
paniculatum	Australian Water Pear		x	x	x							
Tamarix												
aphylla	Desert Tamarisk			x		x						
gallica	French Tamarisk		x	x	x	x	x	x				
ramosissima	Pink Tamarisk		x		x	x	x	x			x	
Tecoma												
stans	Yellow Bells			x	x		x					x
Thuja												
occidentalis	American Arborvitae		x				x					
Trichocereus sp.		x						x				x
Tristania												
conferta	Australian Box			x	x		x					
Ugni												
molinae	Chilean Guava		x				x					
Ulmus												
davidiana var. *japonica*	Japanese Elm			x	x		x					

TABLE 12.—Alien security hedge, garden hedge and windbreak plants that have been used or recommended for use in southern Africa. Scientific names are according to the Liberty Hyde Bailey Hortorium, 1977, and Von Breitenbach (1984) (continued)

Scientific name	Common name	Barrier category			Climatic region				Weed status			
		Security hedge	Garden hedge	Windbreak	Hot and moist	Hot and dry	Cold and moist	Cold and dry	Declared weed	Declared invader	Aggressive	Other
Ulmus												
glabra	Scotch Elm			x	x		x					
parvifolia	Chinese Elm			x	x		x					x
procera	English Elm			x	x		x					x
pumila	Siberian Elm			x	x		x					
Viburnum												
tinus	Laurustinus		x		x		x					
Yucca												
aloifolia	Spanish Bayonet	x			x							
elephantipes	Spineless Yucca	x			x		x					

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Scientific names of indigenous and naturalized alien species are according to Gibbs Russell *et al.* (1985) and Gibbs Russell *et al.* in prep. Common names of indigenous species are according to De Winter *et al.* (1978) unless otherwise stated in Tables 1 & 7. Scientific and common names of alien species are according to The Liberty Hyde Bailey Hortorium 1977, and Von Breitenbach (1984). Species names in *italics* are synonyms. Asterisks indicate alien genera, species and common names.